universal
radio inc.
1997 PREMIER CATALOG 97-03
$2.00

JRC NRD-535D

"Best Communications Receiver"

World Radio TV Handbook 1992

"Unsurpassed DX Performance"

Passport to World Band Radio 1992

Setting the industry standard once again for shortwave receivers, the NRD-535D is the most advanced HF communications receiver ever designed for the serious DXer and shortwave listener. Its unparalleled performance in all modes makes it the ultimate receiver for diversified monitoring applications.

Designed for DXers by DXers! The NRD-535D (shown above with optional NVA-319 speaker) strikes the perfect balance between form and function with its professional-grade design and critically acclaimed ergonomics. The NRD-535D is the recipient of the prestigious World Radio TV Handbook Industry Award for "Best Communications Receiver."

- Phase-lock ECSS system for selectable-sideband AM reception.
- Maximum IF bandwidth flexibility! The Variable Bandwidth Control (BWC) adjusts the wide and intermediate IF filter bandwidths from 5.5 to 2.0 kHz and 2.0 to 0.5 kHz—continuously.
- Stock fixed-width IF filters include a 5.5 kHz (wide), a 2.0 kHz (intermediate), and a 1.0 kHz (narrow). Optional JRC filters include 2.4 kHz, 300 Hz, and 500 Hz crystal type.
- All mode 100 kHz – 30 MHz coverage. Tuning accuracy to 1 Hz, using JRC's advanced Direct Digital Synthesis (DDS) PLL system and a high-precision magnetic rotary encoder. The tuning is so smooth you will swear it's analog! An optional high-stability crystal oscillator kit is also available for ±0.5 ppm stability.
- A superior front-end variable double tuning circuit is continuously controlled by the CPU to vary with the receive frequency automatically. The result: Outstanding 106 dB Dynamic Range and +20 dBm Third-Order Intercept Point.
- Memory capacity of 200 channels, each storing frequency, mode, filter, AGC and ATT settings. Scan and sweep functions built in. All memory channels are tunable, making "MEM to VFO" switching unnecessary.
- A state-of-the-art RS-232C computer interface is built into every NRD-535D receiver.
- Fully modular design, featuring plug-in circuit boards and high-quality surface-mount components. No other manufacturer can offer such professional-quality design and construction at so affordable a price.

JRC Japan Radio Co., Ltd.

Japan Radio Company, Ltd., New York Branch Office – 430 Park Avenue (2nd Floor), New York, NY 10022, USA Tel: (212) 355-1180 / Fax: (212) 319-5227

Japan Radio Company, Ltd. – Akasaka Twin Tower (Main), 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, JAPAN Tel: (03) 3584-8836 / Fax: (03) 3584-8878

JRC NRD-345

Japan Radio Quality. Synchronous Detection. Great Price.

Famous for its top-gun DX receivers, Japan Radio once again pioneers with a new receiver. Only the NRD-345 offers Japan Radio performance and quality at a surprisingly affordable price.

The NRD-345 delivers hour-after-hour of listening pleasure with synchronous AM detection to help tame fading, dual IF filter bandwidths (with a third optional), and high dynamic range. Compact, light, and refined, the NRD-345 offers advanced multifunctions, 100 memory channels, and even personal computer control. The NRD-345 brings shortwave listeners an outstanding value in a high-performance receiver for under $1,000.

- Synchronous AM, AM, CW, SSB, and FAX modes.
- 0.1 to 30 MHz coverage.
- Dual IF filter bandwidths, 4 kHz and 2 kHz, with optional filter position.
- High sensitivity and wide dynamic range. The RF amplifier and first mixer in the front-end incorporate four low-noise junction-type FETs with excellent cross modulation characteristics to ensure both high sensitivity and high dynamic range.
- 100 memories that store frequency, mode, AGC time constant, ATT on/off, VFO, IF filter bandwidth, and NB status.
- Noise blanker.
- Clock/Timer.
- High/low antenna inputs.
- Memory scan and frequency scan functions.
- Personal computer control with optional RS-232C interface cable.
- One-chip DDS-IC in PLL circuit to enhance carrier-to-sideband noise ratio.

JRC *Japan Radio Co., Ltd.*

Japan Radio Company, Ltd., New York Branch Office — 430 Park Avenue (2nd Floor), New York, NY 10022, USA Fax: (212) 319-5227

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WRTH
BEST RECEIVER 1992
Don't wait for "film at eleven"!
Introducing the award-winning FRG-100 Communications Receiver.
Why wait for someone else to tell you what's happening in the world when you can find out first hand?
Have all the hottest news – not just "bites". Listen to music pulsating through Europe. Monitor economic trends in industrialized nations. Eavesdrop on Third World country survival efforts. Track vital crisis developments during conventional communications breakdowns. Or "drop in" to your old neighborhood – even if it's 12 time zones away.
The FRG-100 is loaded with technical advancements like industry-exclusive adjustable SSB carrier offset and user selectable 10Hz, 100Hz or 1 KHz tuning steps. The exciting Broadcast Band mode with 16 pre-programmed international broadcast bands. 50 Memory Channels and twin 12/24 hour clocks to keep you tuned in where and when you like day or night!
Consistent with Yaesu's world-renown reputation for radio communications achievements, the FRG-100 won the prestigious *World Radio TV Handbook* award for "Best Communications Receiver" upon its introduction in December, 1992. But you're the *real* winner! Priced lower than receivers costing much more but with fewer features, the FRG-100 delivers extraordinary and affordable performance. Ask about the FRG-100 and it's remarkable low price at your Yaesu dealer today. Make up your own mind about world events. Find out first hand!
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DOWN
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PHONES
MEM DWN UP
SQL MIN MAX
VOL MIN MAX
SSB CW/N AM/N FM

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Specifications subject to change without notice. Some accessories and/or options are standard in certain areas. Check with your local Yaesu dealer for specific details.

INTRODUCTION TO UNIVERSAL

I am pleased to present you with this, the latest edition of our catalog. Even if you have one of our earlier catalogs, please be sure to examine this catalog carefully for new items and new information. This catalog has been designed to introduce you to the newest and best in communications equipment. As you get to know us, I think you will want to become one of our valued customers.

FACTORY DIRECT DISTRIBUTOR

Universal is the only company that is a direct authorized distributor for all the major communications lines (Kenwood, Grundig, Sony, Sangean, Panasonic, Alinco, Watkins-Johnson, Yaesu, Drake, Standard, Japan Radio Company, Icom, etc.). Since we are directly affiliated with all these fine companies, we can give you objective advice on all brands of equipment. We do not have to "push" any particular manufacturer.

ESTABLISHED OVER 50 YEARS

Universal has been serving the amateur and listening community since 1942. You can be assured that we will be here in the future for support and service.

SHOWROOM DISPLAY

Universal is one of only a few stores in the country with a fully stocked showroom. Our 10,000 square foot facility is open six days a week and features an exceptional selection of communications equipment for the ham and SWL. Every major piece of equipment is on display and operational! Stop in and listen to our excellent selection of receivers, or see one of our operational RTTY or FAX displays. We would be happy to demonstrate any item in our line. If you travel through Central Ohio, please do stop in. We are only 20 minutes from downtown Columbus or the airport.

LOW PRICES

You will find our prices very competitive and we do not add a surcharge to your order if you are using a credit card. Since we do buy direct from the manufacturers, we can offer you very favorable prices across the line. Rarely will you find an authorized dealer that can beat our discounted prices. Plus Universal is an authorized dealer for most major lines and offers knowledgeable help before and after the sale.

FULL INFORMATION

We at Universal think an informed customer is a satisfied customer. We want to provide you with all the information you need to make your next communications purchase. This catalog is a first step towards this goal, but we go further. We have specification sheets and brochures on most large items and will send them to you (usually for a self-addressed stamped envelope). We even offer service and owner's manuals for your review. Please see page 99 for prices on extra manuals. Note: Owner's manuals are included with each radio we sell. These references, along with our objective advice, will ensure your satisfaction.

INFORMATION PAMPHLETS

Universal is pleased to offer a special series of short informational pamphlets all available at no charge - send a self-addressed stamped envelope (SASE) for titles desired.

Antenna Safety Advisory
Interested in Shortwave Radio?
Interested in Amateur Radio?
Installing RF Connectors
Introduction to ACARS
Listening to Radioteletype
Receiving FAX on Your Shortwave Radio

USED EQUIPMENT

Universal offers a fine selection of used equipment for the communications enthusiast. Every piece of used equipment that we take in is thoroughly tested before being released for re-sale. All our used equipment carries a sixty day parts and labor limited warranty (unless specifically stated otherwise). Whether you are a new hobbyist on a budget, or an advanced DXer looking for a "stand-by" set; check our inventory of used gear! We publish a complete list of used equipment every two or three weeks! To get your copy send a self-addressed stamped envelope. Our used equipment list is also posted on our www home page:
http://www.universal-radio.com

TRADE-INS

Yes, we do take trade-ins! If you would like to trade your present gear in for a new unit or even another piece of used gear, let us know. Please write or e-mail to us indicating what you wish to trade-in. Indicate the condition of the equipment and whether you have the box, manual, etc. We also buy clean used equipment. We will reply with our offer.

LAY-AWAY

Universal offers a convenient layaway plan. To place any new item in layaway for up to sixty days, a 33% deposit is required. 33% more is required at 30 days. The balance is required at 60 days (or sooner). The item will be shipped after full payment. There are no service or interest charges on layaway orders.

FOREIGN ORDERS

Universal is pleased to process overseas orders. We can prepare quotes or proforma invoices on request. To calculate UPS shipping for Canada, multiply the catalog amount by two. We can also ship postal to Canada. Our toll **free order-line now serves all of Canada.**

FULL SERVICE

Universal offers a selection of communications receivers second to none. We offer a wide range of accessories and modifications too. Upon request, we will inspect and test any piece of communications equipment at no extra charge. Our well equipped service center is **factory authorized** to handle your service needs in or out of warranty. We are interested in you whether you need an 89¢ plug or a $5000.00 receiver.

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UNIVERSAL FOUNDER

Universal was founded in 1942 by F.R. "Gibby" Gibb W8IJ. Universal Service, as it was then called, was located on North Third Street in downtown Columbus, Ohio. Universal carried all the major lines of the time including Millen, Drake, Collins, Hammarlund, Hallicrafters, Johnson and National. Most of the brands have changed, and so has our location. But the same dedication to customer service and satisfaction that our company was founded upon fifty years ago, still remains. As one of the oldest retail radio stores in the country, we are grateful for the support provided to us by the radio community over these many years. We will continue to offer the finest in new and used communications equipment at competitive prices.

HOW TO REACH UNIVERSAL RADIO

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RECEIVING THIS CATALOG

Universal prints a new catalog every 6 to 8 months. Printing and postage costs have recently risen. It is not economically possible, or ecologically prudent to *automatically* mail every catalog to every customer. Anytime you would like a new catalog, please request one. You may request your free catalog by phone, mail, FAX or email. (If you place an order a catalog will be sent with your order if our records indicate you do not have the latest edition).

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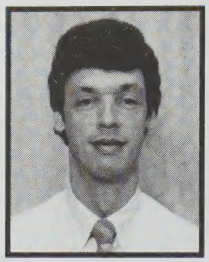
UNIVERSAL STAFF



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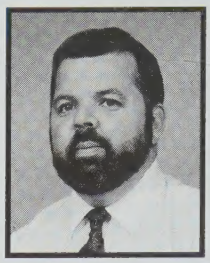

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Sales-Service
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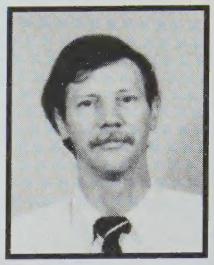

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SWL Sales
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General ham sales, packet and antennas.
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Diane
Office

Barbara
Office Mgr.

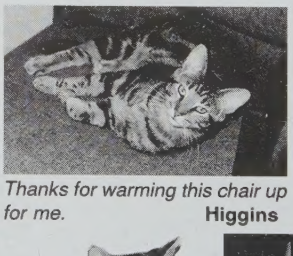
Cathy
Payables

Rick
Webmaster

Debbie
Office

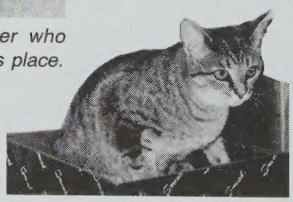
Yes, I do resemble my brother Higgins, but I am much better looking.
Harleigh

Just remember who really runs this place.
Henry



Thanks for warming this chair up for me.
Higgins

Many of you have asked about Mitzu, pictured in previous catalogs. She is now retired, living at home with Fred and Barb and her stepbrothers: Jeepers, Dickens and Harold.



I never met a box I didn't like.
Hanna

I'll start the diet ... tomorrow.
Howard

Cover: QSLs of F. Osterman (mid 1960s)

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UNIVERSAL RADIO COMPANY POLICIES

- **PAYMENT:** We accept Visa, Mastercard, Discover, money orders, cashiers checks and personal checks. Phone order customers please be ready to provide card number, expiration, issuing bank, billing and shipping address plus home & work phone. We request this information for your protection. Personal checks may require time to clear from unestablished customers and/or large purchases.
- **MINIMUM ORDER:** We have no minimum. Your order is important to us whether it is for $5 or $500.
- **SHIPPING:** We ship most in-stock items within 48 hours (UPS Next Day and Second Day Air orders are shipped within 24 hours). Our normal method of shipment is UPS Surface for equipment and bookrate for books. We do not ship C.O.D. We ship Monday through Friday. You may request shipment by other means such as UPS Next Day Air, UPS Second Day Air or Air Freight for export orders. Equipment is packed very carefully and sent insured. Please provide us with a full shipping address. UPS cannot ship to a Post Office box. Shipping amounts indicated in this catalog are for the continental U.S.A. only. Canadian UPS shipping is approximately two times the U.S.A. amount shown. Foreign customers should include adequate shipping. We can provide shipping quotes.
- **PRICES:** **Prices and specifications are subject to change!** Prices shown are accurate at printing time. We are not responsible for typographical errors. We suggest you call to confirm prices on larger items. The recent fall of the dollar against the yen has made prices unstable on some imported goods. Please call toll free: 800 431-3939. For technical questions please call: 614 866-4267.
- **WARRANTY SERVICE:** Our service department is authorized to perform warranty work on Kenwood, Icom, Yaesu, JRC and other major lines. However, we do not perform warranty repairs for all brands. If you are not sure please call us. Copy of receipt must accompany returns for warranty repair.
- **ALL REPAIRS:** When sending in a product for service, please "double" box it carefully and ship it insured for your protection. Please include a note clearly describing the problem, how you wish the item returned and how you wish to pay for the service. Package your radio properly. Universal is not responsible for merchandise damaged in shipment. Our service rate is $40 per hour (½ hr. minimum).
- **BACK ORDERS:** Universal carries an extensive inventory to minimize "back ordered" items. Because of manufacturer shortages, backorders do occasionally occur. You may cancel any backordered item at any time for any reason and receive a prompt and full refund. On credit card orders we will not bill your card until we actually ship.
- **RETURNS:** Returned items must be received by us in original, as shipped, condition including the original box, manuals, accessories, copy of sales receipt and warranty card. Note: Do not send in the warranty card until after 10 days, and you are certain that the product will suit your needs. Returns must be within **14 days** of purchase. Returned items are subject to a 15% restocking fee. Shipping is not refundable. Outdoor antennas, software and custom cables are not refundable.
- **FOREIGN ORDERS:** Foreign orders must be payable in U.S. dollars. You may use Visa, Mastercard, Discover card, postal money order or bank check drawn on a U.S. bank with transit numbers imprinted on the bottom of the check. Shipping amounts indicated in the catalog are for the U.S.A. only. Include adequate shipping to your location. We can provide shipping quotes. We do not ship large amateur antennas outside of the United States. Some manufacturer's warranties are not valid outside of the United States. Foreign orders will be sent surface rate (slow!) unless air is specifically requested.
- **DAMAGED SHIPMENTS:** If you receive a damaged parcel from UPS, note this with the driver and refuse the shipment. It will be returned to Universal and we will replace it for you at no additional cost.
- **COUPONS:** Many amateur manufacturers run coupon promotions. Universal will accept and can supply these discount coupons. Contact Universal to see what coupons are currently available.

TO PLACE AN ORDER:

Mail to:

Universal Radio
6830 Americana Pkwy.
Reynoldsburg, OH 43068-4113

Phone: **800 431-3939 Orders & Prices**
614 866-4267 Technical Info.
We accept phone orders Monday through Friday from 9 A.M. to 6 P.M. Eastern
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FAX: **614 866-2339 24 Hour FAX**

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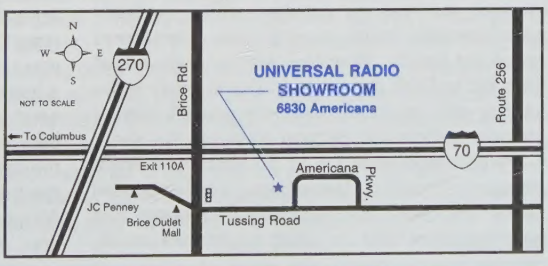
Sun	Mon	Tue	Wed	Thr	Fri	Sat
Closed	10-5:30	10-5:30	10-5:30	10-7:00	10-5:30	10-3:00



USED LIST

To receive our latest monthly list of used equipment please send us one or more **self-addressed stamped envelopes.** Although our used inventory changes daily, we typically have a nice selection of transceivers, receivers, HT's, RTTY equipment and related accessories on hand. Our used equipment is checked in our service shop and carries a 60 day limited warranty. Our used list may also be viewed on our web site at:

http://www.universal-radio.com

PURCHASE

If you have equipment you are not using, why not turn it into cash? Universal will purchase good clean used equipment. Please write us, and let us know what you have to sell.

"DEMO" SALE

Universal will not sell returned or demonstrator units as new! From time to time we have such items and can usually offer them at 15 to 25% off our regular price. Please call to check availability.

TRADE-INS

For trade-in quotes, please call or write us listing the items you wish to trade including any optional accessories. Indicate condition and whether you still have the original box and manual. Unlike other dealers, Universal will accept trade-ins towards: new, used, higher or lower value equipment.

SHIPPING TO UNIVERSAL

When you ship your equipment for trade-in or purchase it is important that it is packaged properly. Use the original box and packing material if possible. If you do not have the original box, wrap the equipment well with bubble wrap then place this in a box with adequate packing material. All equipment should then be placed in a **second box** with packing material to help ensure its safe arrival to us. Please be sure to insure your package for its value. Universal Radio will not be responsible for equipment that is damaged in shipment.

DEALERS

Are you an established electronics retailer looking to add Universal equipment or books to your product line? Universal offers many products at dealer pricing for resale. If you would like more details please **write** to us on your letterhead describing your business and interests. Please include your vendor tax number.

AUTHORS

Universal Radio Research is a leading publisher of specialized books on radio communications. If you are seeking a publisher for your amateur or shortwave radio publication please **write** to: Universal Radio Research, Attn: F. Osterman, 6830 Americana Pkwy., Reynoldsburg, Ohio 43068. Briefly describe your proposed publication. Please do not send manuscripts.

GIFT CERTIFICATES

Gift certificates are available in any amount. When ordering a gift certificate indicate *your* name and address **plus** the recipients name & address.

INTRODUCTION TO SHORTWAVE

Listening to shortwave, or *world band*, radio is an exciting and educational form of entertainment. With a moderate investment, anyone can listen to a variety of broadcasts from around the world.

WHAT IS SHORTWAVE RADIO?

The standard AM broadcast radio band extends from 540 to 1600 kHz. Shortwave radio starts where the standard AM band ends and extends to 30000 kHz or 30 MHz (1000 kHz = 1 MHz). Unlike medium wave signals, shortwave signals will reflect (refract) off the invisible layer above the earth called the ionosphere. While worldwide shortwave reception can occur during the day, best reception is usually during the evening.

WHAT CAN I HEAR?

The shortwave spectrum is vast. There are potentially thousands of stations that can be heard. The major types of stations are:

International Broadcast Stations

Every major country in the world, as well as many small countries, have English transmissions that can be heard in North America. These English broadcasts can be anywhere from 1/2 hour to several hours in length. Many countries beam their transmissions directly to N. America to enhance reception for Canadian and American listeners. Some of the easier English broadcasts to hear come from:

BBC London	Radio Moscow
RNE Madrid	Radio Sweden
Radio Tirana	HCJB Quito
Radio Sofia	Voice of America
Radio Japan	Radio Beijing
Vatican Radio	Radio Switzerland
Radio Canada	Radio Nederland
Radio Prague	Radio South Africa
RAI Rome	Radio Australia
DW Cologne	Radio Budapest
Radio Austria	Radio Havana
Radio Norway	Voice of Turkey

These and other stations design their programs for international audiences. There is an even greater number of regional and local shortwave stations that broadcast to their native populations. These lower powered stations typically transmit in the local language. A variety of interesting programming and music can be heard from these stations, especially from S.America, Africa and the Pacific.

Radio Amateur Stations (HAMS)

There are over 900,000 licensed amateur radio operators all over the world. Listening to hams can be interesting and a good way to learn more about ham radio. Hams are assigned to a different set of frequencies than the international broadcasters. If you want to listen to amateur stations, you will need a "general coverage" receiver. In order to transmit greater distances and efficiently use their allocated frequencies, hams transmit in a special voice mode called single sideband (SSB) and also Morse code. Again, it is important to select a radio capable of receiving these modes. Our staff will direct you to radios best suited for this.

Citizen Band (CB)

CB stations can be heard on most general coverage receivers. CB transmissions can be found between 26 and 28 MHz.

Utility Stations

If you subtract from the shortwave spectrum all the international broadcasters, HAM and CB stations, you will be left with a large number of stations loosely labeled "utility stations." These are commercial, government, military and research stations whose transmissions are not designed for general audiences. Some types of utility stations:

International Aeronautical

International commercial aircraft communicate with distant air centers using shortwave radio. It would not be surprising to hear an AirFrance jet talking to Santiago Control, or a JapanAir flight working Anchorage Control. We are fortunate that the international aeronautical language is English!

Maritime Stations

Shortwave radio remains the primary link between ships at sea and land. There are hundreds of coastal stations and a nearly endless number of ships which can be monitored on a shortwave radio capable of SSB and Morse reception. Listening to ship-to-shore channels and distress frequencies can be particularly interesting.

Military Stations

While most "sensitive" military traffic is sent via satellites or encrypted, numerous military transmissions can be heard and identified. The following navies can easily be heard with a communications receiver: American, French, S. African, British, Argentine and New Zealand.

Time Stations

Many countries have stations which send out very precise time transmissions. Most include voice identifications and many can be heard in the USA.

Miscellaneous

There remain a number of stations that do not fall neatly into the previous categories. Illegal "bootleg" stations can be heard from time to time. Central America hosts several "clandestine" stations run by various rebel factions. They can be heard in the U.S. when they are not being jammed. There are a number of stations which transmit series of numbers without identification. While they are easy to hear, no one has conclusively determined their intent. Some Soviet and American satellites in low orbit can even be monitored.

WHAT KIND OF EQUIPMENT DO I NEED?

The answer depends on what you want to hear. If the international broadcast stations are your main interest, you may be satisfied with a modestly priced portable model covering these international broadcast bands. Portables are generally priced from $50 to $350. If you would like to listen to the various utility or amateur stations you will want to consider a radio with general coverage (full shortwave coverage from 1.6 to 30 MHz) and single sideband capability. These larger more advanced radios are called communications receivers and are priced from $600 up. Used models are usually in stock at Universal, and can afford a considerable savings. Contact us for a copy of our used list.

WHAT DO I USE FOR AN ANTENNA?

Good shortwave reception is possible with a very modest antenna. Portables include a whip antenna which will work quite well. Many portables and all communications receivers provide an external antenna jack (or terminal). Many listeners simply attach a 20 to 40 foot length of regular insulated wire to this jack and then stretch it across the room. This will yield surprisingly good results. However, if you can string the wire outdoors to a tree or pole, still better reception will result. Universal can provide the wire, insulators, *Coax-Seal* and lead-in cable for your antenna. Other more advanced or specialized antennas are also available. If improved reception is desired and an outdoor antenna is not possible, we suggest "active antennas". These compact antennas work amazingly well.

> ***Caution:*** *Avoid overhead utility lines when stringing outdoor antennas. Contact with overhead lines can cause electrocution. Outdoor antennas should be grounded to help prevent lightning damage. If you are new to antenna construction please request a free copy of our "Antenna Safety Advisory".*

HOW DO I KNOW WHERE TO TUNE?

One of the most exciting aspects of shortwave listening is simply tuning the dial and discovering stations from all ends of the earth. However, there are times when you will want to tune a particular country, perhaps because of an important event occurring there. Two excellent books for the shortwave listener are the *Passport to Worldband Radio* and the *World Radio TV Handbook*. Both of these annual publications will guide you to the proper frequency. If you want to hear the exciting "utility" stations, the book *Guide to Utility Stations* is a "must." We also sell directories listing amateur stations and other specialized directories. There are a number of excellent monthly publications published on shortwave listening.

WHAT IS U.T.C. or G.M.T. TIME?

In order to avoid the confusion of many time zones, hams and international broadcasters always refer to time at the zero meridian (which runs through Greenwich, England). This time zone is five hours ahead of Eastern Standard Time (4 hours ahead of Eastern Daylight Time). This 24 hour format is referred to as Coordinated Universal Time (UTC). For example 4:00 P.M. EST = 21:00 UTC.

WHAT IS THIS I HEAR ABOUT "QSLs"?

Most international broadcast stations like to hear from their listeners. If you send a "reception report" to a foreign broadcast station they will send you a confirmation of your reception in the form of a postcard called a "QSL". They also will usually send you a program guide and information about their country. A reception report should include the date and time you heard the station (in UTC), the frequency heard, reception quality and 15 to 30 minutes of program content to validate reception. Also tell them how you liked the program!

DRAKE

SW-2

Dollar for dollar, the new Drake SW-2 has to be the best value in shortwave radio today. Here is a table top receiver, with a truly impressive array of features and capabilities, at a price that everyone can afford. Never before have you been able to get so much radio for so little money. Of course the SW-2 covers all longwave, medium wave (AM) and shortwave frequencies. Single sideband is easily tuned with separate LSB and USB positions. Amplitude modulated signals sound great through the front firing speaker. When a shortwave signal does start to fade you can engage sideband selectable synchronous tuning to stabilize and improve the signal. The capable memory system is nonvolatile and stores 100 channels (storing frequency, mode and detection). Memory recall may be accomplished by either keypad entry or by rotating the main tuning knob while in memory mode. Other refinements include: RF Gain, Tuning Bar Graphs, 100 Hz readout and Dimmer. Dual antenna inputs accept either a PL-259 coaxial or wire feedline. A mini earphone and ¼" external speaker jack are provided. The optional remote lets you operate this radio from across the room. The oversized digital display is large enough that you can actually see the frequency from across the room. Universal is excited to offer this exceptional radio value. The reliable, American-made Drake SW-2 carries a limited one year warranty.

Order #2222 **$489.95** (+$7)

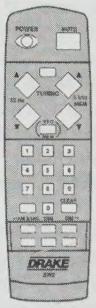
SPECIFICATIONS

Frequency Range	100 - 30000 kHz
Power	12 VDC 1.5A 120VAC P.S. included
Antenna Impedance	50 ohm
Selectivity (-6dB)	AM 6.0 kHz SSB/CW 2.3 kHz
Sensitivity	<.5 µV SSB (10 dB S+N/N)
Intermediate Freqs.	1st IF = 55.845 MHz 2nd IF = 455 kHz
Audio Output	1 Watts at 8 Ohms
Standard Steps	50Hz via Tuning Knob 5kHz Up/Down Buttons
Circuit Type	Dual Conv. Superhet.
Dimensions	10.875" x 4.4" x 7.62" 276x111x194 mm
Weight	5.8 Lbs. net (2.6 kg)

OPTIONS

- **Drake MS-8** This external speaker includes a 6 foot cord with plug. *#2846* **$48.95** (+$4)
- **Drake Carry-Tilt Handle** This plastic handle snaps on in a jiffy. *#1317* **4.95** (+$3)
- **Drake MMK-1 Mobile Mounting Bracket** Inverted or upright. *#3032* **14.95** (+$3)
- **Drake Infrared Remote Keypad** *#1589* **48.95** (+$3)
  Operate your SW-2 from across the room! This stylish remote does it all! Tune the radio up and down, control the volume, enter frequencies, change modes, mute and even dim the display!

REMOTE



MS-8

JRC Japan Radio Co., Ltd.

NRD-345

Famous for its top-gun receivers, Japan Radio Company once again pioneers with a brand new model. The NRD-345 offers J.R.C. performance and quality at a surprisingly affordable price. This incredibly attractive and compact radio delivers hour-after-hour of listening pleasure with high dynamic range and synchronous AM detection to help tame fading. Dual IF filters are supplied, with a third optional position available. Please see page 7 for JRC filters and options. Tuning the radio is smooth as silk via the large indented main tuning knob. Of course keypad entry in kHz or MHz is also available. The easy-to-read LCD type display shows you the precise frequency to 10 Hz! The variable Noise Blanker is effective against pulse and ignition interference. The sophisticated memory system stores 100 channels with frequency, mode, AGC, attenuator, VFO, bandwidth and NB status parameters all stored. Both memory and frequency scanning are supported. The Clock-Timer function enables the radio to turn on and off at a specific time and the clock can be set for UTC or local time. The Tone Control, AGC and 20 dB Attenuator let you refine the signal to your personal taste. Other refinements include an analog S-Meter, Tilt-Bar, Up/Down Tuning buttons, Dual VFOs and Dial Lock. Rear panel jacks include: External Speaker, Record Jack, FAX/RTTY Line Out and DB-25 RS-232C port. Switch selectable dual antenna inputs are featured to support both wire-type or coaxial-type lead ins. A built-in RS-232 post facilitates connecting a personal computer (4800 baud, 1 start bit, 8 data bits, no parity, 1 stop bit). All J.R.C. products are covered by a limited one year warranty. As JRC's largest North American dealer, and an authorized JRC service center, you can purchase your NRD-345 with complete confidence.

Order #0345 **Please Call**

SPECIFICATIONS

Frequency Range	100 - 30000 kHz
Power	12 VDC .9 A 120VAC P.S. included
Antenna Impedance	50/450 ohm
Selectivity (-6dB)	AM 6.0 kHz SSB/CW 2 kHz
Sensitivity	<.3V SSB 1.8-30 MHz (10 dB S+N/N)
Stability	±10 ppm 5-60 mins. ±2 ppm >60 mins.
RS-232 Interface	4800 baud (1/8/N/1)
IF Rejection	>70 dB
Image Rejection	>70 dB
Dynamic Range	100 dB (IF range 500 Hz)
Audio Output	1 Watts at 8 Ohms
Standard Steps	10 Hz, 100 Hz, 1 kHz 10 kHz
Circuit Type	Dual Conv. Superhet.
Temperature	0° to 50°C (32° to 122°F)
Dimensions	9.9" x 4" x 9.5" 250x100x240 mm
Weight	7.7 Lbs. net (3.5 kg)

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #1937 ..... $29.00

Note: We expect the NRD-345 to sell for under $1000, but pricing was not available at press-time.

JRC Japan Radio Co., Ltd. NRD-535

Japan Radio Company once again "re-writes" the standard by which other advanced receivers are measured. General coverage reception from 90 to 30000 kHz in AM, USB, LSB, CW, RTTY, FAX and narrow FM modes. A triple conversion superheterodyne circuit is employed to provide superb sensitivity and image rejection. Japan Radio has designed a special high-speed 1 Hz step PLL synthesizer to provide you with 1 Hz tuning resolution never before available (display resolution is 10 Hz). A sophisticated 200 channel nonvolatile scanning memory stores frequency, mode, AGC, ATT and IF filter selection. Channels can be scanned at a user-defined rate (.5 to 5 seconds/channel). Sweep reception can be adjusted from .05 to .5 seconds/step. Japan Radio's reputation for extreme stability continues with only ±2 PPM drift (after 1 hour) making the NRD-535 the inevitable choice for the demanding non-voice modes such as Morse code, RTTY and FAX. Four independent filter positions are available. The *WIDE* position features a 4 kHz (@ -6dB) filter. The *INTER*mediate position features a 2 kHz (@ -6dB) filter. The *NARR*ow and *AUX*iliary positions are not filled. (An empty AUX position results in a +12 kHz bandwidth). The *AUX*iliary positions can be used to mount optional filters. Any filter may be used with any mode (except FM). This is an exceptional feature that provides listener flexibility.

The ergonomic keypad features both MHz and kHz input. The dual-width noise blanker can be used to reduce or eliminate pulse noise (like auto ignition or the "woodpecker"). Other front panel controls include: SQUELCH, AF and RF GAIN and TONE. An AGC button permits the selection of AGC FAST, SLOW or OFF. The DIMMER button offers four brightness levels. A built-in 24 hour clock timer is provided. The TIMER permits unattended listening/recording. The receiver can be programmed to be turned on at a particular time (on a set frequency, mode, bandwidth, etc.) and then turn off at a programmed time. A timer-out terminal connection is provided on the back of the set to activate a tape recorder. The NRD-535 contains a built-in RS-232 computer interface (4800 baud, 8, N, 1). Cable and software are not supplied.

The NRD-535 offers **Pass Band Shift** (PBS). This effective control varies the apparent intermediate frequency for the IF filter by ±1 kHz without changing the receiving frequency. This is a powerful means of eliminating or reducing troublesome adjacent channel interference. See *Figure 1*. Because of the overcrowded nature of today's HF spectrum, annoying heterodynes can be found with increasing regularity. The **Notch Control** permits the listener to go into the signal and sharply "slice-out" the offending tone with very little loss in fidelity to the desired station. Notch attenuation is -40 dB or more. See *Figure 2*.

Japan Radio Company NRD-535 List $1429.00 *Order #3169* **$1199.00** (+$17)

NRD-535D(B)

Those desiring still more sophistication and performance should consider the "D" or deluxe version. The D version includes the: CFL-243, CMF-78 and CFL-233 installed.

The NRD-535D(B) now includes the improved ● **CFL-243 Bandwidth Control Option**. You can adjust this control to narrow the 2 kHz filter or the 4 kHz filter in 10 Hz steps without varying its center frequency, ensuring effective interference rejection. This control functions in the SSB/CW and AM modes. It is a powerful tool to extract a desired signal from the crowded passband.

Perhaps the most exciting feature in the NRD-535D is the ● **CMF-78 Exalted Carrier Selectable Sideband** (ECSS) circuit. Often when receiving an AM signal you will encounter interference from an adjacent station. The interference will manifest itself on either the upper or lower sideband of the signal you are trying to hear. The ECSS feature will select the sideband that is not affected and deliver the signal to you with high tonal quality. The D model also includes the ● **CFL-233 1000 Hz Filter**, popular with RTTY enthusiasts. For additional filter options and accessories please see page 7. The Japan Radio NRD-535D is designed to meet the exact needs of the most demanding broadcast or utility DXer.

Japan Radio Company NRD-535D(B) List $2029.00 *Order #1535* **$1689.00** (+$18)

SPECIFICATIONS

Frequency Range	90 - 30000 kHz
Power	100/120/220/240 VAC
	50/60 Hz 35VA max.
	12 VDC 25W max.
Antenna Impedance	50 or 600 ohm
Selectivity (-6dB)	AUX (12 kHz)
	WIDE >4 kHz
	INTER >2 kHz
	NARR >1 kHz *in "D"*
	[FM] >12 kHz
Sensitivity	.5 µV 1.6-30 MHz
	SSB/CW S+N/N=10dB
Image Rejection	>70 dB (1.6 - 30 MHz)
Dynamic Range	106 dB (@300Hz BW)
IF Rejection	>70 dB (1.6 - 30 MHz)
Frequency Accuracy	± 10 x 10^{-6} or better.
Frequency Stability	± 10 PPM 5-60 mins.
	± 2 after 1 hour.
Intermediate Freqs.	1st IF = 70.45399 MHz
	2nd IF = 455 kHz
	3rd IF = 97 kHz
BFO Variation Range	455 kHz = ± 2 kHz
PBS Variation Range	± 1 kHz or more
Notch Attenuation	-40 dB or more
Audio Output	1 W at 4 Ohms
Line-Record Output	>1mW at 600 Ohms
Digital Interface	4800 baud (8,N,1)
Dimensions	13" x 5.2" x 11.25"
	330 x 130 x 280 mm
Weight	20 Lbs. (24 Lbs. ship)

Figure 1.

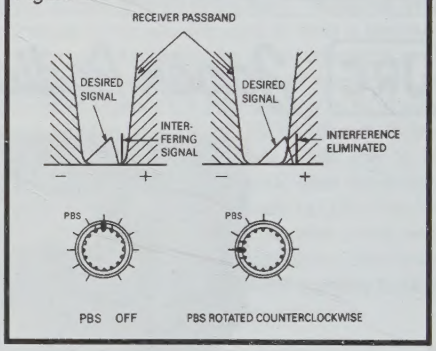
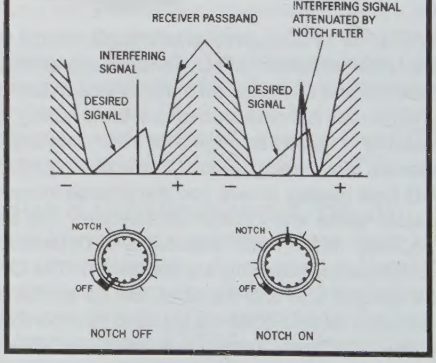


Figure 2.



LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #2657 ..... $39.00

JRC Japan Radio Co., Ltd.

OPTIONS

NRD-345	NRD-515	NRD-525	NRD-535D	Order#	Price	Item
		✦		*2675*	$369.95	**Japan Radio CMK-165 VHF/UHF Converter** This option consists of two boards which plug directly into the NRD-525. Additional frequency coverage provided: 34-60 MHz, 114-174 MHz and 423-456 MHz. Provides separate VHF and UHF SO239 (for PL259s) antenna jacks.
		✦	✦	*0063*	$109.95	**Japan Radio CMH-530 RTTY Demodulator** This internally mounted board will permit the reception of common amateur RTTY at 45 and 50 baud Baudot in three shifts: 85, 200 and 425 Hz. Speed and shift are selected by the numeric keypad. The RTTY output is to a parallel printer port on the NRD-525 and to the RS-232C port on the NRD-535D. Tuning scope output is provided.
		✦		*2308*	$64.95	**Japan Radio 6ZCJD00139 Printer Cable** This preassembled cable connects the CMH-530 to a parallel printer.
		✦		*2708*	$109.95	**Japan Radio CMH-532 Computer Control Board** This option permits computer control of the NRD-525 via the serial port of most computers. Advanced monitoring function, such as automatic tuning and customized scanning are possible. Cable and software are not provided.
			✦	*0851*	$59.95	**Japan Radio 6ZCJD00350 Serial Cable** This preassembled 6½ foot cable connects the NRD-535 to a DB25-type serial computer port.
		✦	✦	*0667*	$59.95	**Japan Radio NVA-88 Speaker** This speaker is sized and finished to match the NRD-525. 4 ohms. 5"H x 7"W x 10"D. With cable.
			✦	*0852*	$179.95	**Japan Radio NVA-319 Speaker/Audio Filter** This speaker is sized and finished to match the NRD-535. With built-in audio filters. 4 ohms. With cable.
✧	✧	✧	✧	*1225*	$139.95	**Japan Radio CFL-218A Filter 1800 Hz -6dB** This filter provides nice selectivity for SSB and also for wide shifted (850 Hz) RTTY.
	✧			*0658*	$139.95	**Japan Radio CFL-230 Filter 300 Hz -6dB** This 300 Hz crystal filter provides razor-sharp CW reception. Comes with NRD-515 filter PCB card.
✧		✧	✧	*0193*	$139.95	**Japan Radio CFL-231 Filter 300 Hz -6dB** This 300 Hz crystal filter provides the optimum bandwidth for razor-sharp CW reception.
✧		✧	✧	*0290*	$139.95	**Japan Radio CFL-232 Filter 500 Hz -6dB** This versatile 500 Hz crystal filter provides sharp selectivity for comfortable CW reception and for narrow shifted radioteletype signals (170 Hz) such as Sitor.
✧		✧	●	*0294*	$139.95	**Japan Radio CFL-233 Filter 1000 Hz -6dB** ***Note:*** *This option is included in the NRD-535D.* This 1000 Hz crystal filter is used for copying commercial RTTY and as a very sharp SSB filter.
✧		✧	✧	*2455*	$139.95	**Japan Radio CFL-251 Filter 2400 Hz -6dB** This filter provides comfortable SSB listening and is a good value for FAX.
			✧	*0974*	$62.95	**KIWA CLF-D2K Filter 3500 Hz -6dB** This filter is popular among DXers desiring a tight AM filter.
	✧			*0657*	$139.95	**Japan Radio CFL-260 Filter 600 Hz -6dB** This filter is optimized for CW and narrow shifted (170 Hz) radioteletype. Comes with NRD-515 filter PCB card.
		✦	✦	*1775*	$169.95	**Japan Radio CMH-365 Extender Board** This device will permit board testing and troubleshooting while the board is in circuit.
			✧	*1223*	$79.95	**Japan Radio CGD-135 High Stability Crystal Oscillator** This option will reduce drift to an incredible ± .5 PPM.
			●	*0677*	$369.95	**Japan Radio CFL-243W Bandwidth Control** ***Note:*** *This option is included in the NRD-535D.* The bandwidth control continuously reduces the pass bandwidth enough to eliminate disturbing signals.
			●	*0714*	$239.95	**Japan Radio CMF-78 ECSS Unit** ***Note:*** *This option is included in the NRD-535D.* The CMF-78 Exalted Carrier Selectable Sideband option can dramatically reduce adjacent channel interference. When receiving an AM (DSB) signal, the ECSS unit selects a sideband which is immune from the interference. Unlike conventional means of eliminating interference (such as selecting a narrower filter), the ECSS control ensures clear reception with little deterioration of tonal quality.
			✧	*1695*	$169.00	**Japan Radio 6ZPJD00070 B.W.C. Upgrade Kit** This upgrade kit is only for NRD-535D receivers with serial numbers under BR56005. It will upgrade the receiver to allow BWC operation in the SSB and AM modes with both the Inter. and Wide filters. Considerable disassembly and soldering is required.
✧				*2002*	?	**Japan Radio CFQ-8673 Filter Board** Auxilliary filter installation board. Price not available at press time.

SHIPPING: **Include $3 shipping** per accessory except speakers which are $5. There is FREE shipping on all accessory items (except speakers) at time of receiver purchase.

LEGEND: ✦ User installable with no soldering.
✧ Requires soldering and/or technical skill
● A supplied option with the NRD-535D.

EXTENDED WARRANTIES

Universal Radio offers optional extended limited warranties on many larger equipment items. Extended warranties must be purchased at time of equipment acquisition. This extended warranty follows all the restrictions, terms and limitations of the original manufacturer's warranty. All repairs required during the extended warranty period must be done at the Universal service facility. Copies of warranties are available upon request. Please see page 99 of this catalog for detailed information on this program.

DRAKE

R-8A

The R.L. Drake Company has been a leading name in American electronic communications since 1943. The new Drake R-8A is the latest offering in this proud tradition of excellent receivers. The R-8A is a microprocessor-controlled, synthesized, all mode, world band receiver offering excellent sensitivity, high dynamic range and other features for the most demanding listener. It has been designed as a "complete package." You get many items as standard-equipment, that would be extra on other receivers. Multimode reception (AM, FM, USB, LSB, RTTY and CW) is featured throughout the range of the receiver (100 kHz to 30 MHz). A high-Q, 8-pole, electronically switched IF filter provides a range of five bandwidths. User selection of bandwidths is now available with one keystroke independent of mode (or automatic). The improved, easier to read, front panel display provides visual feedback to the operator of the current status of the receiver. In the AM mode, a selectable synchronous detector (SYNCHRO) allows for enhanced reception by eliminating or reducing distortion due to fading signals. A Passband Offset control also aids in reducing or eliminating interfering signals by electronically shifting the receiver's IF frequencies without disturbing the operating frequency. This action allows the operator to electronically move interfering signals out of the receiver's passband thus utilizing the degree of selectivity provided by the high-Q, 8-pole IF filter. The Passband Offset is also coupled to the synchronous detector (SYNCHRO) allowing the passband to be altered while the detector is in use. Other reception aids include selectable AGC, wide/narrow noise blanker, RF preamplifier for enhancing weak signals, RF attenuator for further improvement of strong signal handling capabilities, tone control and an adjustable RF gain. A Notch filter is also supplied as an effective tool to eliminate offending tones (heterodynes). A muting control allows operation with a transmitter or transceiver. The R-8A provides exceptional audio to the built-in speaker.

Two VFOs (tuners) called A and B, are provided on the R-8A. Selection is made with the VFO function key. Frequencies can be directly entered through the keypad. A programmable memory area allows for 440 nonvolatile alphanumeric memories. The following may be stored in any memory location: frequency, mode, bandwidth, AGC setting, RF setting, antenna, notch on/off, noise blanker setting and synchronous detector on/off. As a result of three scan methods and three scan modes; nine distinct scan functions are supported in the R-8A. The three *methods* are: Stop at carrier detect, Pause 5 seconds on carrier and Pause at carrier until carrier drops for 5 seconds, then resume scan. The three *modes* are: Scan all memories, all unlocked memories of user-selected list or Scan from VFO A to B. The memory scanning speed has been increased to 40 channels per second.

The R-8A has two 24 hour clock-timers to allow the R-8A to turn on and off at preset times. In addition, the rear panel Timer connection (5 pin DIN) allows control of small recorders, etc. to record a favorite program. The R-8A rear panel provides a common DB-9 connector for standard RS-232C data communications with a terminal or personal computer (9600,1,7,1,even). This interface provides complete control and programming capability of the R-8A including reports of frequency, mode, memory channel, name and signal strength. Only the analog controls such as volume, RF gain, etc. are not controllable. In terms of performance and features, the American-made R-8A is the new state-of-the-art standard! Our best selling communications receiver.

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #2193 ..... $39.00

PRICING

Drake R-8A List Price $1099.00
Drake R-8A Discount Price
Order #0080 ..... **$1059.95**
Shipping/Handling/Insurance $15.00

OPTIONS AND MODIFICATIONS

✧ **Drake VHF Internal Converter** *Order #0076* ..... **$199.95** (+$5)
This internally mounted, converter covers all modes of reception from 35 to 55 MHz and 108 to 174 MHz with full frequency display. 50 Ohm SO-239 antenna jack. For Drake R-8 or R-8A only.

✦ **Drake MS-8 Speaker** (shown on page 9) *Order #2846* ..... **$48.95** (+$4)
Add this matching speaker for improved fidelity and clarity. (4 inch, 4 ohm, 2.5W, 6 foot cord).

R-8A IMPROVEMENTS

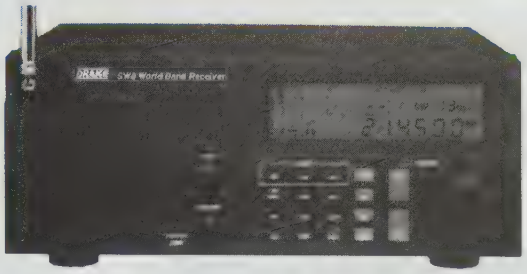
- **Improved Ergonomics:** Single key presses will select your mode and bandwidth.
- **More Memories:** 440 memory positions.
- **Faster Scanning:** Scan 40 chans. per second.
- **Alphanumeric Display:** Program names may be displayed on the front panel.
- **Display & Entry Frequencies:** User programmable in kHz or MHz.
- **Cabinet Feet:** Front panel tilt via a metal bail.
- **Event Timers/Clocks:** 2 Timers. The time may be programmed to remain on at all times.
- **Improved AGC:** The AGC has a smoother attack for improved SSB listening.
- **Tone Control:** Expanded control of high frequency range.
- **FM Receive Mode**: New highpass filter to reduce sub-audible tone squelch signals.
- **Line Cord**: New detachable power cord.
- **Expanded RS-232 Control:** Allows customized reports of frequency, mode, memory, channel, name, and signal strength.

SPECIFICATIONS

Frequency Range	100 - 30000 kHz	
AC Power	100/120/200/240 VAC	
	50 or 60 Hz 40 Watts	
DC Power	11 - 16 VDC @ 2A	
Antenna 1, Converter	50 ohms unbalanced	
Antenna 2	50 or 500 ohms unbal.	
Selectivity	@ -6dB	@ -60dB
All modes except FM	6.0 kHz	<12.0 kHz
	4.0 kHz	<8.0 kHz
	2.3 kHz	<4.5 kHz
	1.8 kHz	<3.6 kHz
	.5 kHz	<1.5 kHz
FM mode only	12.0 kHz	<25.0 kHz
Ultimate Selectivity	>95 dB	
Image Rejection	>60 dB	.1-1.5 MHz
	>80 dB	1.5-30 MHz
I.F. Rejection	>80 dB	45 MHz
	>100 dB	50 kHz
Third Ord. Intercept	> +20dBm	
Dynamic Range	100 dB	
Notch Filter Attn.	40 dB min Depth (500-5000 Hz)	
Sensitivity	10 dB S+ N/N	
SSB/CW	<1.0µV	.1-1.5 MHz
	<0.5µV	1.5-30 MHz
	<0.25µV	5-30 MHz[1]
AM	<3.0µV	.1-1.5 MHz
	<1.5µV	1.5-30 MHz
	<0.8µV	5-30 MHz[1]
		[1]with preamp
FM (12dB SINAD)	<0.5µV	1.5-30 MHz
Freq. Stability	±5 ppm. -10° to 50° C.	
Freq. Accuracy	±100 Hz. -10° to 50° C.	
Intermediate Freqs.	1st IF = 45 MHz	
	2nd IF = 50 kHz	
Ext. Speaker Output	2.5 Watts, 4 Ohms. <10% distortion	
Recorder Output	300 mV, 4.7K Ohms.	
Demodulator Output	300 mV, 4.7K Ohms.	
Operating Temp.	-10° to 50° C.	
Dimensions	13.2"W x 5.25"H x 13"D	
Weight	13 Lbs. (16 Lbs. ship)	

DRAKE

SW-8



The R.L. Drake Company has created another winner. The new SW-8 is a portable communications receiver offering the worldband listener an impressive array of features. Coverage from 100 to 30000 kHz is supported in AM, USB and LSB modes. Quality reception of the AM broadcast band and all of shortwave is assured. We were delighted to learn that Drake elected to include the FM broadcast band in the new SW-8. Finally a quality communications receiver with FM broadcast band (87 -108 MHz) coverage. And it sounds great too! The extra heavy, forward facing speaker, along with a tone control, combine to offer pleasing fidelity. As a bonus, the VHF aeronautical band is also featured (118 - 137 MHz). Enjoy listening to commercial aircraft overhead, or even control tower transmissions if you live near an airport.

The impressive backlit LCD panel provides all the operational data you need to navigate this impressive receiver. Frequency display resolution is to 100 Hz on AM, shortwave and aircraft bands. The SW-8 is a full fledged communications receiver, but it is also a true portable. The full size front handle makes it easy to carry. Please note that this handle can be conveniently removed by the user for stationary operation. The SW-8 holds six D cells, and a pivot point 41 inch telescopic whip extends from the front for fully independent field operation. A 1/8th inch headphone jack is provided.

For the shortwave and medium wave broadcast bands, a selectable sideband synchronous detector (SYNC) improves reception by reducing distortion due to fading signals. Other aids include: slow or fast AGC, RF attenuator and tone controls. Three IF bandwidths are supplied (6, 4 and 2.3 kHz). Two independent clocks provide dual time zone selection and a 2-event timer turns the radio on at a prescribed time. Seventy nonvolatile memories store: frequency, mode, bandwidth, AGC setting, RF attenuator and synchronous detector on/off. Memory channels may be accessed manually or through "time scan" with each channel monitored for 5 seconds. Keypad entry provides instant access to any frequency. The back plane of the radio includes a PL259-type antenna jack or wire inputs for shortwave. Spring terminals are also provided for an external FM/AIR antenna. Record output, and external speaker (4 - 8 ohm) jacks are also featured. The SW-8 comes with a plug-in 120VAC power pack or may be run from six D cells (not provided). The latest member of the proud Drake family, the SW-8 provides performance, flexibility and features at an affordable price. Made in the U.S.A.
Note: Drake has indicated that a price increase will take effect in April 1997. Please call for latest pricing.

SPECIFICATIONS

Frequency Range	100 - 30000 kHz	
	87 - 108 MHz	
	118 - 137 MHz	
AC Power	120 VAC 60 Hz adapter or 6 internal D cells	
Antenna 1	50 ohms unbalanced	
Antenna 2	50 or 500 ohms unbal.	
Antenna FM/AIR	300 ohms	
Selectivity	@ -6dB	Mode
	6.0 kHz	AM
	4.0 kHz	AM
	2.3 kHz	LSB/USB
Ultimate Selectivity	>95 dB	
Image Rejection	>60 dB	.5-30 MHz
	>50 dB	87-108 MHz
	>60 dB	118-137 MHz
I.F. Rejection	>80 dB	55.845 MHz
	>80 dB	455 kHz
IP3 Intercept Point	>-20dBm 5 kHz spacing	
	>+10dBm 20 kHz "	
Dynamic Range	>95 dB .5-30 MHz SSB	
Sensitivity	10 dB S+ N/N	
SSB	<0.5µV	.5-30 MHz
AM	<2.0µV	.5-30 MHz
FM (20 dB S/N)	<4.0µV	87-108 MHz
FM (20 dB S/N)	<4.0µV	118-137 MHz
Freq. Stability	±10 ppm. 0° to 50° C.	
Freq. Accuracy	±100 Hz. @50° C.	
Ext. Speaker Output	2 Watts, 4 Ohms.	
Line Output	300 mV, 4.7K Ohms.	
Operating Temp.	0° to 50° C.	
Dimensions	11.5"W x 5.25"H x 13"D	
Weight	10 Lbs. (13 Lbs. ship)	

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #0564 ..... $29.00

PRICING

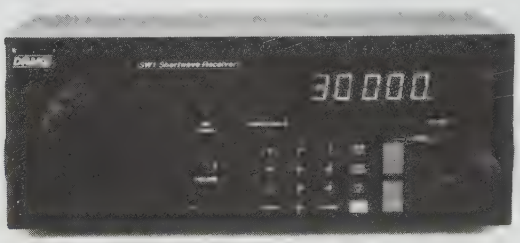
Drake SW-8 List Price $799.00
Drake SW-8 Discount Price
Order #0088 ..... **$699.95**
Shipping/Handling/Insurance $10.00

SW-8 CASE

This protective blue canvas carrying case is just right for transporting your SW-8 safely.
SW-8 Case *Order #1342* **$48.95** (+$4)

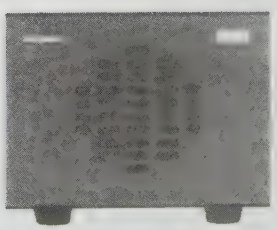
DRAKE

SW-1



The new Drake SW-1 sets the stage for worldwide shortwave listening with ease, simplicity and clarity. The SW-1 offers superb sensitivity, selectivity and full audio. Coverage from 100 through 30000 kHz provides solid coverage of longwave, medium wave and shortwave in the AM mode (no SSB). This makes it an ideal broadcast receiver for the desk or bed-stand. Tuning is a snap via the keypad, manual tuning knob, Up/Down buttons or 32 programmable memories. The LED display is positively huge for easy accurate frequency readout to 1 kHz. Antenna input is via a 50 ohm terminal or SO-239 jack. A 1/8" mini jack is provided for use with earplug or headphones (not supplied). Includes AC wall adapter for operation from 120 VAC 60 Hz. 10.875"x4.375"x7.625" 4.7 Lbs. One year limited warranty.
List Price $299.00 *Order #1100* **$249.95** (+$7)

MS-8



Add this matching external speaker to your Drake R-8, R-8A or SW-8 for improved fidelity and clarity. Black metal case with 4 inch, 4 ohm, 2.5 watt speaker. Includes 6 foot cord with plug.
MS-8 *Order #2846* **$48.95** (+$4)

YAESU

FRG-100B

The Yaesu FRG-100B receiver provides the performance of a quality communications receiver at an affordable price. Solid coverage from 50 kHz to 30 MHz in CW, SSB and AM modes (FM mode with optional *#0816*) is featured. The FRG-100B incorporates features that both the casual and serious shortwave listeners will appreciate. Reception modes and most receiver functions are push-button selectable from the front panel. A crisp backlit LCD with adjustable brightness provides frequency readout and important operational status at a single glance. Selectable tuning steps of 10 Hz, 100 Hz and 1 kHz are standard, with other tuning steps programmable by the user. Fifty tunable memories store frequency, mode and filter information. Two additional memories provide band-edge information used for scanning. The FRG-100B has programmable 12/24 hour clocks and sleep timers to enable you to automatically switch the receiver on/off to record your favorite broadcasts. Multifunction scanning (memory, band, selectable group or priority) with carrier or time-delay is supported. A special broadcast band mode enables convenient selection of 16 pre-programmed international broadcast bands. The FRG-100B's adjustable SSB carrier offset permits you to custom tailor the receiver's audio response. CW enthusiasts will enjoy the reverse BFO offset and selectable CW sideband. Installation of the 250 or 500 Hz narrow filter further enhances CW reception and interference rejection. Other features include adjustable AGC, RF attenuator, noise blanker, all-mode squelch, and signal strength meter. The Yaesu CAT system provides a direct link to the CPU in the FRG-100B, allowing a personal computer with the optional Yaesu FIF CAT interface. This can provide computer controlled customized scanning and remote control of most receiver functions.

SPECIFICATIONS

Frequency Range	50 - 30000 kHz
Power	11-13.5 VDC 1.2A
Antenna Impedance	50 or 450 ohm
Selectivity (-6dB)	AM-W 6.0 kHz AM-N 4.0 kHz SSB/CW 2.4 kHz FM (opt.) 15.0 kHz
Sensitivity	<.25 µV 1.8-30 MHz SSB < 1 µV 1.8-30 MHz AM (S+N/N=10dB)
Freq. Stability	<± 10 p.p.m. 0-50°C.
Intermediate Freqs.	1st IF = 47.21 MHz 2nd IF = 455 kHz
Audio Output	1.4 Watts at 8 Ohms
Squelch Sensitivity	<2 µV 1.8-30 MHz (CW, SSB, AM) <.32 µV 28-30 MHz FM
IF Rejection	>70 dB (1.8-30 MHz)
Image Rejection	>60 dB (1.8-30 MHz)
Standard Steps	10Hz/100Hz CW/SSB 100Hz/1kHz AM/FM
Circuit Type	Dual Conv. Superhet.
Dimensions	9"W x 3.6"H x 9.3D"
Weight	6.6 Lbs. (9 Lbs. ship)

PRICING

FRG-100B List Price $739.00
FRG-100B Discount Price
Order #2786 ..... **$589.95**
Shipping/Handling/Insurance $9.00

OPTIONS AND MODIFICATIONS

- **Yaesu FM-100 FM Mode** Permits FM-mode shortwave reception. *#0816* ..... **$44.95** (+$3)
- **Yaesu TCXO-4.** Improves stability from <± 10 p.p.m. to <± 2 p.p.m. *#3176* ..... **94.95** (+$3)
- **Yaesu YF-110C CW Filter** 500 Hz for CW and 170 Hz RTTY *#3177* ..... **144.95** (+$3)
- **Yaesu YF-110CN CW Filter** 250 Hz for CW and 170 Hz RTTY *#3178* ..... **144.95** (+$4)
- **Yaesu FIF-232C Interface** Facilitates RS232 connection to PC *#0322* ..... **89.95** (+$4)
- **B.E.E.I. Wired Keypad** *#0398* ..... **59.95** (+$3)
  Now FRG-100 owners can enjoy the convenience of kepad entry. The B.E.E.I. wired keypad simply plugs into the "CAT" socket on the rear panel of the FRG-100. No battery is required. Other special functions include: recall memory, recall lower scan limit, recall upper scan limit, tune receiver up or down and turn the receiver on and off. Made in France.

B.E.E.I. KEYPAD

LOWE

HF-150

There has quite literally never before been a receiver like the Lowe HF-150, because only now have technology and engineering been combined in such an effective compact package. Coverage is from 30 kHz to 30 MHz with variable tuning rate according to speed rotation of the main tuning knob. Modes are AM, AM Synchronous, USB and LSB (also for CW/RTTY/FAX). The dual conversion design features selectable IF bandwidths of 2.5 and 7 kHz. Sixty memories store frequency and mode. The 1 kHz LCD frequency display can also show: memory number, mode, bandwidth and other functions. Despite its *full-size* performance, the HF-150 is only 7.2"W x 3.2"H x 6.5"D and operates from internal AA cells or 12 VDC. The improved AC power supply is now included at no extra charge. Rugged "tank-like" all metal case. Rated *Editor's Choice* in ***Passport'93***. Add the **KPAD-1** *#2100* $89.95 (+$3) for added convenience. Made in England. One year limited warranty. For operation via a computer we suggest the Lowe **IF-150** Interface $89.95 and the **WIN-150** Windows-based control program $69.95.

Lowe HF-150 List $749.95 *Order #0150* **$499.95** (+$8)

SPECIFICATIONS

Frequency Range	30 kHz - 30 MHz
Modes	AM, Sync, LSB and USB
Intermediate Freqs.	1st IF = 45 MHz 2nd IF = 455 kHz
Tuning Increment	8 Hz, 60 Hz.
Sensitivity	.5 µV[1] .2 µV with whip preamp on[1]
Selectivity	2.5 kHz -6 dB 7.0 kHz -6 dB
Stability	<± 30 Hz in 1 hour typical
Antenna Jack	SO-239 50 Ohm clips 600 Ohm
Spurious Response	>65 dB rejection
Distortion	< 1% THD all modes
Output Power	1.6W 8 ohms 5% THD
Power Required	8 AA cells or 12 VDC
Dimensions	7.2"W x 3.2"H x 6.5"D 185 W x 80 H x 160 D mm
Weight	3 Lbs. (1.3 kg)

[1](SSB .5-30 MHz, 50 ohm, 10 dB S/N)

KENWOOD

R-5000

SPECIFICATIONS

Frequency Range	100 - 30000 kHz
Power	120 VAC 50/60 Hz
Antenna Impedance	50 or 500 ohm
Selectivity (-6dB)	AM 6.0 kHz
	SSB/CW 2.4 kHz
	FM 12.0 kHz
Sensitivity	.25 µV 1.8-30 MHz
	SSB/CW (S+N/N=10dB)
Image Ratio	>80 dB (1.8 - 30 MHz)
IF Rejection	>70 dB (1.8 - 30 MHz)
Freq. Accuracy	± 10 x10^{-6} or better.
Intermediate Freqs.	1st IF = 58.1125 MHz
	2nd IF = 8.83 MHz
	3rd IF = 455 kHz (FM)
Audio Output	1.5 Watts at 8 Ohms.
Dimensions	10.6"Wx 3.78"H x 10.6"D
Weight	12.3 Lbs. (17 Lbs. ship)

PRICING

R-5000 List Price $1249.95
R-5000 Discount Price
Order #2300 ..... **$989.95**
Shipping/Handling/Insurance $14.00

LIMITED WARRANTY

Optional Extended Warranty To: 3 Years
Order #2001 ..... $29.00

The Kenwood R-5000 offers an exceptional array of advanced features coupled with high performance. It is compact but very well laid out. This all band, all mode receiver has superior interference reduction circuits and has been designed with the highest performance standards in mind. Kenwood's Dynamix system ensures an honest 102 dB dynamic range (@14 MHz, 500 Hz bandwidth, 50 kHz spacing). The dual digital VFOs are accurate to ±10 PPM ensuring exceptional stability and readout to 10 Hz! The sophisticated 100 channel memory stores mode, frequency and antenna selection. Versatile memory and frequency scanning is available with center-stop tuning. Direct keypad entry and digital 24 hour clock timer are standard. Other controls include: SQUELCH, NOTCH, IF SHIFT. Effective dual noise blankers, auto-manual filter select, selectable AGC and position RF attenuator are also provided. 120 VAC. UL listed.

OPTIONS AND MODIFICATIONS

✦ **Kenwood SP-23 Speaker** For improved tonal quality	*#0692*	**$79.95** (+$4)
✦ **Kenwood YK-88A1 AM Filter (6 kHz -6dB)**	*#0733*	**94.95** (+$3)
✧ **Kenwood YK-88SN SSB Filter (1.8 kHz -6dB)**	*#0318*	**124.95** (+$3)
✧ **Kenwood YK-88C CW Filter (.5 kHz -6dB)**	*#1299*	**124.95** (+$3)
✧ **Kenwood YK-88CN CW Filter (.27 kHz -6dB)**	*#0316*	**94.95** (+$3)
✧ **Universal Scan Mod.** Permits time *or* carrier operated scanning.	*#0007*	**19.95**
✧ **Special AM Filter (4 kHz -6dB)**	*#2959*	**89.95** (+$3)

AOR

AR-7030

SPECIFICATIONS

Frequency Range	0 - 32000 kHz
Circuit Type	Dual Conv. Superhet.
IF	45 MHz, 455 kHz
Selectivity (-6 dB)	10, 7, 5.5, 2.2 kHz
Sensitivity	.3 µV SSB 10 dB S/N
	from .15-32 MHz
Stability	±2.5 PPM
Dynamic Range	>100dB AM (7 kHz)
	>105dB SSB (2.2 kHz)
	>110dB CW (.5 kHz)
Audio Output	2W 8 ohms
Antenna Impedance	50 ohm or single wire
Power	12-15 VDC 500 ma
	or with supplied AC PS
Dimensions	9.4"W x 3.55"H x 10" D
	238x93x277mm (2.2 kg)
Weight	4.9 Lbs. (9 Lbs. ship)

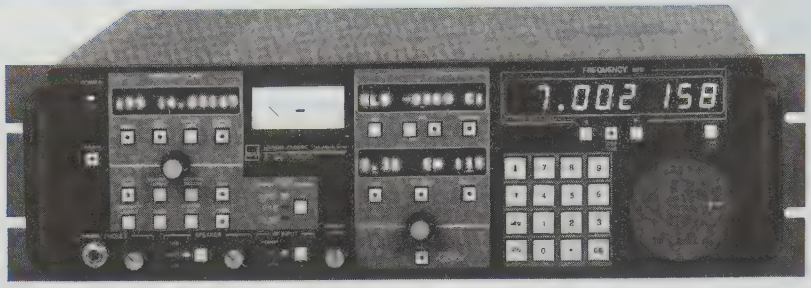
PRICING

AR-7030 List Price $1399.95
AR-7030 Discount Price
Order #0777 ..... **$1149.95**
Shipping/Handling/Insurance $12.00

The AOR AR7030 is the result of a combined project between the AOR Company of Japan and a designer group in England. The AR7030 represents the very latest and best design featuring exceptionally strong signal handling and is bristling with enhanced features. The AR7030 has been targeted to handle strong signals that are of prime concern to European listeners. It offers greater than =35dBM IP3 (Intercept point 3) and greater than 100 dbm dynamic range. This coupled with excellent selectivity make the AR7030 a strong choice for the shortwave broadcast listener or DXer. Although performance is excellent, features have not been forgotten. You get: Synchronous AM, Passband Tuning, six levels of attenuation, dual VFOs and 24 hour clock-timer. The 100 scannable memories store frequency, bandwidth, PBS, Squelch and BFO settings. The mini headphone jack will accept a mono or stereo 3.5mm plug. The two line 48 character backlit LCD gives you the status of the receiver. The supplied full-featured 32 button infra-red remote provides access to virtually all facilities including: volume, tone, numeric keypad, memories, PBT, filter selection, etc. A remote RS-232 level port (5 pin 240 DIN) is also provided for computer control. Made in England. Includes 120 VAC wall transformer.

WATKINS-JOHNSON

HF-1000



The new Watkins-Johnson HF-1000 is a fully synthesized general coverage receiver that combines analog and digital signal processing (DSP) to achieve a level of performance not previously available to the shortwave listener. Covering 5 kHz to 30 MHz with 1 Hz tuning *and* display resolution, the HF-1000 now provides capability previously enjoyed only by military and commercial users. Functions such as a synchronous AM demodulation, noise blanking, I.F. filtering, AGC, demodulation, Beat Frequency Oscillator and passband tuning are accomplished through the use of DSP techniques. Filters with superior amplitude and group delay characteristics are achieved with digital stability and repeatability. An astounding array of 58 I.F. bandwidths are available to allow the operator to optimize selectivity under any signal environment. Filters range from 56 Hz, for monitoring CW with exceptional signal-to-noise ratios, all the way up to 8 kHz for monitoring AM signals with maximum fidelity. Available detection modes are synchronous AM, FM, CW, USB, LSB and ISB. A tunable BFO can be adjusted in 10 Hz steps over a ±8000 Hz range, and passband tuning is available to further enhance the reception of CW signals. Gain control can be accomplished manually or automatically, with fast and slow AGC modes available. The squelch threshold is adjustable from 0 to -135 dBm, or it can be disabled. A noise blanking feature can also be enabled to effectively eliminate the adverse effects of impulse noise. A tunable I.F. notch filter allows the operator to reject undesired signals with the IF passband. The HF-1000 has an internal switchable preamplifier and attenuator, and analog S-meter, plus a built-in diagnostic self-test capability.

In addition to fixed-frequency tuning, the HF-1000 provides fast, flexible scanning capability. Three scan modes are available: channel scan, F1-F2 scan and F1-F2 scan with lockouts. For all scan modes, the dwell time can be set from .5 to 20 seconds or infinite. In channel scan mode, 100 programmable memory channels are available. Sectors of memory can be specified for individual channel scans, allowing the available memory to be subdivided into multiple search scenarios. The operator can specify certain channels to be skipped without having to delete them from memory. Memory channels can also be single-stepped manually. In both F1-F2 scan modes, the step size is user-selectable from 1 Hz to 25 Hz. Up to 100 independent frequency lockouts can be stored.

The HF-1000 can be operated locally via the front panel or remotely via one of two selectable serial interfaces. Measuring 5.25 x 19 inches, the microprocessor-controlled front panel provides a user-friendly operator interface with dedicated, logically arranged controls and large, easy-to-read LED displays. A majority of the HF-1000 operator-selectable parameters are controllable and accessible via the RS-232 remote interface. A Carrier Sense Multiple Access with Collision Detection (CSMA) with a limited instruction set interface may be enabled, in lieu of RS-232 to allow the HF-1000 to be controlled using a command protocol similar to several popular consumer receivers. Selection of the active interface is via an internal switch setting or by front panel entry. All receiver inputs and outputs are available on the rear panel of the unit with the exception of the front-panel mounted headphone jack. The antenna and external reference inputs, as well as the signal monitor and predetected I.F. outputs are available on BNC connectors. Speaker and dual-balanced line audio outputs are available on a terminal strip along with DC-coupled audio, RSSI and squelch outputs and a mute control input. The RS-232 interface is available on a DB-25 and CSMA interface is provided via a miniature stereo phone jack. The HF-1000 can be used as a tabletop receiver or mounted in a standard 19 inch equipment rack occupying 5.25 inches of vertical space. Operates 97 to 253 VAC (47-63 Hz) automatically adjusting to the input line voltage. One year limited warranty. Made in U.S.A.

SPECIFICATIONS

Frequency Range	5 - 30000 kHz
Display Resolution	1 Hz
Power	97 - 253 VAC (47-440 Hz)
Consumption	35W typical
Antenna Impedance	50 or 450 ohm
Selectivity (-3dB)	see IF FILTERS chart
Sensitivity	<.35 µV .5-30 MHz CW <.56 µV .5-30 MHz SSB < 1.58 µV .5-30 MHz AM (S+N/N=10dB,no preamp)
Ref. Freq. Stability	<± 1 p.p.m.
I.F. Rejection	85 dB min (>90 typical)
3rd Order Intercept	+30 dBm typical
2rd Order Intercept	+60 dBm typical
AGC Attack Time	15 msec typical
AGC Decay Time	Fast: 25 msec typical Slow: 4 seconds typical
Audio Output	1 Watt at 8 Ohms
Antenna Input	50 ohms nominal, BNC
I.F. Output	455 kHz, 50 ohms, BNC
Noise Figure	14 dB max, 11 with pre.
Remote Control	RS-232 full dupl. DB25. 75, 150, 300, 600, 1200 2400, 4800 & 9600 baud
MTBF	10,000 hours
Dimensions	19.0"W x 5.25"H x 20.0"D
Weight	15 Lbs. (19 Lbs. ship)

I - O CONNECTORS

Input	Antenna	BNC
	External Reference	BNC
	Power	IEC 3-pin
	Mute	Terminal block
Output	Signal Monitor	BNC
	I.F.	BNC
	Line Output A	Terminal Block
	Line Output B	Terminal Block
	Speaker	Terminal Block
	DC coupled audio	Terminal Block
	Squelch	Terminal Block
	Signal Strength	Terminal Block
	Headphone	1/4" stereo
Both	CSMA Remote Intfc.	1/8" mini stereo
	RS-232	DB 25 female

IF FILTERS

56	113	225	450	900	1800	3600	7200
63	125	250	500	1000	2000	4000	8000
69	138	275	550	1100	2200	4400	
75	150	300	600	1200	2400	4800	
81	163	325	650	1300	2600	5200	
88	175	350	700	1400	2800	5600	
94	188	375	750	1500	3000	6000	
100	200	400	800	1600	3200	6400	

(Nominal 3-dB bandwidth in Hz)

PRICING

HF-1000 List Price $3995.00

HF-1000 Discount Price

Order #1500 ..... **$3799.00**

Shipping/Handling/Insurance $22.00

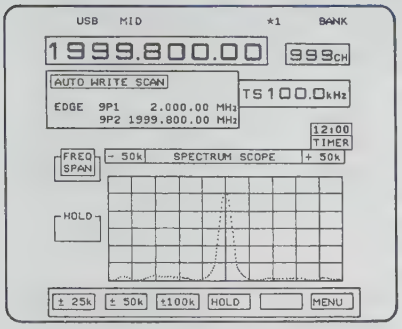
OPTIONS

✦ **Watkins-Johnson Suboctave Preselector** *Order #0738* ..... **$599.95** (+$7)
This option provides filtering of R.F. input spectrum to reduce broadband signal energy into the receiver. Tracking is fully automatic providing 11 separate filter bands. Can be easily bypassed if preselection is not desired.

✦ **Watkins-Johnson HF-1000 with Preselector** *Order #1501* ..... **$4399.00** (+$23)
The HF-1000 receiver with the Suboctave Preselector installed.

ICOM R-9000

CRT DISPLAY



The R-9000 is a revolutionary all-mode, super wideband receiver that continuously covers a frequency range of 100 kHz to 1999.8 MHz. The most visible of the radio's many advanced features is the built-in multifunction CRT display. Receive frequencies, modes and additional useful data are displayed for your operating convenience. The CRT functions as a spectrum scope to show you, at a glance, the relative signal strengths of nearby receive frequencies. The span of the spectrum scope can be selected for ±25, ±50 or ±100 kHz according to your needs. The screen can also display the contents of 10 memories at once, and can be scrolled to display other memories. The CRT can also be used as a display device to monitor RTTY or packet via an ASCII RS-232 input port (external data converter required). The R-9000 boasts a total of 1000 memories (ten banks of 100) store frequencies, mode, filter width and tuning step increments. You can use different memory banks according to station type, frequency ranges or whatever your preference. By using the memory list screen, many more convenient functions are provided: up to eight character notes for your reference; and the advanced super convenient memory editor function easily moves, copies and deletes the memory contents. Tuning steps: 10 Hz, 100 Hz, 1 kHz, 5 kHz, 9 kHz, 10 kHz, 12.5 kHz, 20 kHz, 25 kHz and 100 kHz. The R-9000 has seven different scan functions with adjust scan speeds up to 13 channels/sec. *Program Scan* scans between pre-programmed scan edges. *Memory Scan* scans memory channels. *Selected Number Memory Scan* scans memory channels with the same programmed mode. *Priority Scan* monitors specified memory channels. *ΔF Scan* scans around the receiving frequency. *Auto Memory Write Scan* programs receive frequencies into memory channels (900-999) during programmed scan. The R-9000 also provides versatile scan resume functions when a signal is received: the scan cancels, pauses until a signal disappears, pauses for an adjustable time, or pauses for the mixed conditions of signal activity and time. The *Voice Scan Control* systems allows you to skip inconvenient signals such as signals with no modulation, heterodynes or noise.

Superior interference rejection is achieved with both IF shift and notch filters. Control features include dual clocks with two kinds of sleep timers and five independent daily timers. Noise reduction is accomplished with a wide-narrow noise blanker. The squelch can operate by meter or noise level. A keypad is provided for rapid frequency entry. The output of the CRT can be routed to an external monitor, and the CRT can act as a monitor for an external or internal video source. See TV or your RTTY decoder on the CRT! Rack mounting handles are included. Rear jacks include: DC Out, Ext. Spkr., Record Remote, Speech Out, Line Out, IF (10.7 MHz) Out, Video In & Out, Data In, Acc., plus four antenna jacks.

The R-9000 can be purchased via gov't. or commercial purchase order only, or for export.

SPECIFICATIONS

Frequency Range	.1 - 1999.8 MHz
Power	110 - 120 VAC 60 Hz Less than 110 VA
Antenna Impedance	50 ohm (400-500 ohm[1])
Selectivity (-6dB)	AM 6 kHz SSB 2.4 kHz CW .5 kHz FM-N 6/15/30 kHz FM-W 150 kHz
Sensitivity	.16 µV 1.6-30 MHz .32 µV 30-999 MHz
Frequency Stability	±25 Hz .1-30 MHz
Inter. Freqs.(MHz)	1st IF 48.8 (.1-30) 1st IF 778.7 (30-500) 1st IF 278.7 (500-1000) 2nd IF 10.7 3rd IF .455 4th IF 10.7
Audio Output	2.5W at 10% distortion with an 8 ohm load
Antenna Jacks	.1-30 MHz SO-239 .1-30 MHz RCA [1] 30-1000 MHz N 1000-1999 MHz N [1]HF Antenna Two
Dimensions	16.7"W x 5.9"H x 14.4"D
Weight	44.1 Lbs. (61 Lbs. ship)

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #1585 ..... $99.00

PRICING

R-9000 GOVT List Price $7600.00
R-9000 GOVT Discount Price
Order #0419 ..... **$6199.00**
Shipping/Handling/Insurance $35.00

OPTIONS AND ACCESSORIES

✦ **Icom UT-36 Voice Synthesizer** *Order #3002* ..... **$51.95** (+$3)
This option *tells* you the frequency and mode at the press of a button.

✦ **Icom CK-70 DC Kit** *Order #0887* ..... **$28.95** (+$3)
Permits easy operation from any 12 VDC source.

✦ **Icom SP-20 Speaker** *Order #1672* ..... **$214.95** (+$6)
Matching speaker for improved tonal quality. Includes audio filter. With audio cable.

✦ **Icom CT-16 Satellite Interface Unit** *Order #0785* ..... **$109.95** (+$5)
Provides frequency control coordination for satellite communications with Icom transceivers.

✦ **Icom CT-17 CI-V Level Converter** *Order #2771* ..... **$119.95** (+$5)
For remote control using a computer with RS-232 port. Control software not supplied.

HOW TO REACH UNIVERSAL RADIO

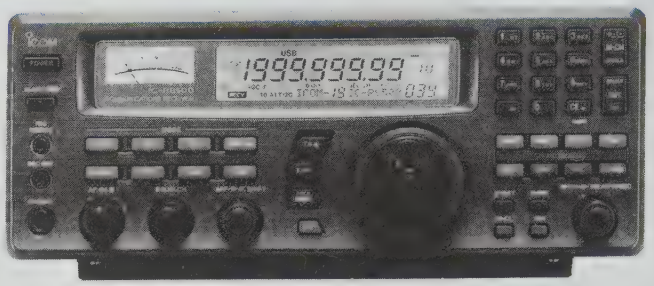
Mail: **Universal Radio Inc.**
6830 Americana Parkway
Reynoldsburg, OH 43068-4113

Phone: **800 431-3939** Orders & Prices
614 866-4267 Technical Info.

FAX: **614 866-2339**

E-mail: **dx@universal-radio.com**

ICOM R-8500-02



The R-8500-02 produces performance, coverage and sophistication rarely seen outside the military commercial market. Covering 100 kHz to 1999.99 MHz (less cellular), this receiver does cover it all; and more importantly; it does it *well* throughout this extraordinary range. Most wideband receivers tend to perform only modestly below 30 MHz. The R-8500 (and R-9000) are clear exceptions to this rule. Reception modes include AM, LSB, USB, CW, FM-N and FM-W. This receiver is equipped with IF Shift and Auto Peak Filter functions ... a first for receivers in this class. The IF shift effectively rejects nearby signals in the SSB modes. The APF can select between two bandwidths and serves as a tone control in the FM mode and can also selectivity boost signals in the CW mode. Triple conversion and Advanced RF circuits achieve an improved dynamic range of 107 dB and an intercept point of 27.5 dBm. Separate band pass filters minimize cross modulation and provide high sensitivity in the .1 to 30 MHz range. The R-8500 employs a newly designed PLL circuit which provides tuning and readout resolution to an amazing 10 Hz. A host of tuning steps are featured: 10, 50, 100 Hz, 1, 2.5, 5, 9, 10, 12.5, 20, 25, 100 kHz and 1 MHz. In addition you can program your own tuning step (.5-199.5 kHz). And what a memory system! 1000 channels are available organized in 20 banks of 40 channels, plus 100 skip channels and 100 Auto Write Memories. Other refinements include: Noise Blanker, S and Center Tune Meter, RF Attenuator, LCD Dimmer, Clock-Timer, Record Jack and Recorder Activation Jack, Selectable AGC, Main Dial Tension adjustment and 3 separate antenna connectors (covering 2 ranges: .1-30 and 30-2000 MHz). Supplied with AC adapter or may be run from 12 VDC. We are proud to offer this exceptional receiver!

SPECIFICATIONS

Frequency Range	.1-1999.99 MHz less cellular
Power	13.8 VDC 2 Amps
Antenna Impedance	50 ohm unbalanced
Selectivity (-6dB)	FM-N 5.5 kHz FM/AM 12 kHz FM-W 150 kHz SSB/CW 2.2 kHz
Sensitivity	-14 dB µ 2-30 MHz -10 db µ 30-999.9 MHz -10 db µ 1240-1300 MHz SSB (10 dB S/N)
Spurious Rejection	>60 dB 1.5-30 MHz >50 dB 30-1000 MHz
IF Shift Range	± 1.2 kHz
Dynamic Range	107 dB
Frequency Stability	± 100 Hz <30 MHz ± 3 PPM >30 MHz
Circuit Type.	Triple Conversion except Dual Conversion on WFM
Audio Output	2 Watts 4 - 8 Ohms.
Dimensions	11.3" x 4.4" x 12.16"
Weight	17.7 Lbs. (22 Lbs. ship)

Specifications are preliminary and subject to change.

The **R-8500-03- GOVT** model is the same as the **R-8500-02**, but *without* the 824-849 / 869-894 MHz. cellular gap and can be purchased via gov't. or qualifying commercial purchase order or **for export** only. *Order #0663* **$1849.00** (+$17)

PRICING

R-8500-02 List Price $2465.00
R-8500-02 Discount Price
Order #1850 ..... **$1849.00**
Shipping/Handling/Insurance $17.00

R-7000	R-7100	R-8500	Order#	Item	Description	Price
✦			*2661*	**TV-R7000 TV Adapter**	Receive standard TV (NTSC format) amateur fast scan TV (ATV). B&W or color composite video monitor is required. Output is RCA jack.	**$279.95** (+$6)
	✦	✦	*2841*	**TV-R7100 TV Adapter**	Receive standard TV (NTSC format) amateur fast scan TV (ATV). B&W or color composite video monitor is required. Also provides FM stereo. Output is RCA jacks.	**299.95** (+$6)
		✦	*3437*	**UT-102 Voice Syntz.**	This option announces the displayed frequency.	**54.95** (+$3)
	✦		*3002*	**UT-36 Voice Syntz.**	This option announces the displayed frequency in English or Japanese.	**54.95** (+$3)
✦	✦		*0828*	**AH-7000 Antenna**	Outdoor omni-antenna with 50 lead-in covering 25-1300 MHz. (See page 48).	**149.95** (+$8)
✦	✦		*2771*	**CT-17 CI-V Level Conv**	For controlling receiver with computer via RS-232C port. (Software not provided).	**119.95** (+$5)
✦	✦		*1672*	**SP-20 Speaker & Filter**	External speaker with built-in audio filters. Includes audio cable.	**214.95** (+$6)
		✦	*1473*	**SP-21 Speaker**	External speaker. Includes audio cable.	**99.95** (+$6)
		✦	*0903*	**FL-52A CW Filter**	This 500 Hz filter is great for CW or narrow shifted RTTY.	**169.95** (+$3)
		✦	*1479*	**CR-293 Hi Stability**	This high stability option virtually eliminates drift	**269.95** (+$4)

AOR AR5000

The new AOR AR5000 offers exceptional spectrum coverage. Covering all the way from 10 kHz to 2.6 GHz (less cellular), this "DC to daylight" radio won't miss much! Modes of reception include: AM, FM-N, FM-W, LSB, USB and CW. Six bandwidths are supplied (3, 6, 15, 40, 110 and 220 kHz.) and a slot for a .5 kHz filter is available. The triple conversion circuit and varactor tuned front-end provides excellent overload characteristics. One thousand memories in 10 banks of 100 are featured. Other features include: two antenna inputs, antenna attenuator, keypad entry, computer control, squelch, S-meter and scanning. May be run from 12 VDC (1 Amp) or via supplied AC adapter. One year limited warranty.

AOR AR5000 *Order #3464* **Please Call**

SPECIFICATIONS

Frequency Range	10 kHz - 2600 MHz^
Modes Received	AM ^cellular blocked FM-Narrow FM-Wide LSB/USB/CW
Intermediate Freq.	1st 622.2 MHz 2nd 10.7 MHz 3rd .455 MHz
Sensitivity	AM 10dB S/N: .6 µV 1.5 -30 MHz FM 12dB SINAD .3 -.2µV 40-2600 MHz
Freq. Stability	PPM (0°-50°C)
Selectivity	3, 6, 15, 40, 110, 220 kHz
Frequency Steps	1 Hz to 999.999 kHz
Ant. Impedance	50 Ohm
Power	13.8 VDC ±15% at 1 amp
Dimensions	8.5"W x 3.5"H x 10"D
Weight	10 Lbs.

ICOM R-10-05

Tune in the world where ever you go. The R-10 has extremely wide coverage from .5 to 1300 MHz (less 824-849 & 869-894 MHz cellular). This radio performs. It is a triple conversion superheterodyne and utilizes newly designed, tunable bandpass filters for good image and intermodulation rejection. The internal speaker provided powerful clear audio. The R-10 also features a real-time bandscope function making it easy to find busy frequencies and also easy to observe the receiving frequency band conditions. The passband width of the bandscope is selectable from the radio of ±100 kHz (20 kHz channel spacing) and ±25 kHz (5 kHz channel spacing). A sophisticated 1000 channel memory system with 8-character alphanumeric channel names offers great convenience. Even the memory banks can be labeled with a 10 character name. Scan typed include programmed, memory, bank, mode and more. The new SIGNAV Signal Navigation scan function is also featured. Icom's special VSC Voice Scan Control stops only on voice signals. Other refinements include: NB, NL, Attenuator and AFC. The R-10 is very computer friendly! You can clone, download or control your R-10 using optional Icom CSR10 software and OPC-478 PC Cloning Cable. The R-10 comes with four AA NiCad cells, a wall charger, belt clip, wrist strap and flexible antenna. You may also operate this radio from four alkaline AA cells. Never before could you hold so much sophistication and capability in your hand.

Icom R-10-15 List $610.00 *Order #3550* **$499.95** (+$7)

The **R-10-15 GOVT** model is the same as the R-10-05, but *without* the cellular gaps. The **R-10-15 GOVT** can be purchased via government or qualifying commercial purchase order or for export only.

Order #3551 **$519.95** (+$7)

OPTIONS

#	Model	Item Description	Price
1180	OPC-478	PC to R-10 Cloning Cable	**$44.95** (+$3)
0918	OPC-479	R-10 to R-10 Cloning Cable	**23.95** (+$3)
2483	CS R10	PC Cloning Software	**26.95** (+$3)
0149	LC-140	Carrying Case	**26.95** (+$3)
2771	CT-17	Level Converter	**119.95** (+$5)
3150	CP-12L	Cigarette Plug With Filter	**27.95** (+$3)
1666	OPC-254L	Charging Cord	**10.95** (+$2)

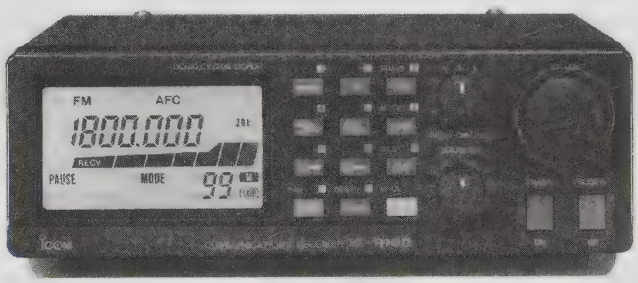
■ Shipping on accessories is **free** at time of receiver purchase.

SPECIFICATIONS

Dimensions	5.1"H x 2.3"W x 1.2"D 130 H x 58 W x 32 D mm
Weight	11 oz (310 g)
Frequency Range	500 kHz - 824 MHz 849-869 MHz 894-1300 MHz
Modes	AM, FM-N, FM-W, CW, LSB and USB
Frequency Step	.1, .5, 1, 5, 6.25, 8, 9, 10,12.5, 15, 20, 25, 30, 50 or 100 kHz & user def.
Sensitivity	AM 1 µV 5-200 MHz[1] CW .25 µV 5-200 MHz[1] FM-N .32µV 5-200 MHz[2] FM-W 1µV 75-200 MHz[2] FM-W 2.2µV 200-400 MHz[2]
Selectivity	AM, FM-N 15 kHz -6 dB FM-W >150 -6 dB SSB, CW >4 kHz -6dB
Antenna Jack	BNC
Output Power	120 mW 8 ohms 10% Dist.

[1](10 dB S/N) [2](12 dB SINAD)

ICOM R-100-11 & R-100-3 GOVT



The Icom R-100-11 is a compact multi-function receiver covering from 100 kHz to 800 MHZ and 900 to 1856 MHz (specifications guaranteed from 500 kHz to 800 and 900 to 1800 MHz). Reception modes include AM, FM and FM-wide. The R-100-11 is easy to operate. You can use either the keyboard or tuning control to access frequency and memory channels. Frequency Step: 1, 5, 8, 9, 10, 12.5, 15, 20, 25 kHz (12.5, 20, 25 kHz above 905 MHz). Of the 121 total memory channels, 100 store operating frequencies, modes, RF attenuator and preamplifier settings. 20 scan edge memory channels are used for specifying ten pairs of frequency ranges required for programmed scan. Auto-memory write automatically memorizes received frequencies (channels 80 ~ 99). One channel is used for priority scan. The built-in 24 hour clock-timer has lithium battery backup. A 15 dB preamp operates in the 50 to 800 MHz range. Three separate antenna jacks are utilized for .1 - 50 PL259, 50 - 800 (N) and 905 - 1856 MHz (N). A large backlit LCD ensures readability. Other supplied features include: AFC, ANL, mobile bracket and telescopic antenna. Requires 13.8 VDC @1 Amp. 2"H x 5.9"W x 7.1"D 3.1 lb. (1.4 kg)

Icom R-100-11 List $960.00 *Order #2103* **$769.95** (+$8)

The **R-100-3 GOVT** model is the same as the R-100-11, but *without* the 800-900 MHz gap. The **R-100-3 GOVT** can be purchased via government or qualifying commercial purchase order or for export only.

Icom R-100-3 List $960.00 *Order #0808* **$769.95** (+$8)

PYRAMID

The **Pyramid PS-3** 3 amp regulated 12 VDC power supply will run the R-100 from 120 VAC. With fuse, LED, surge and short protection.

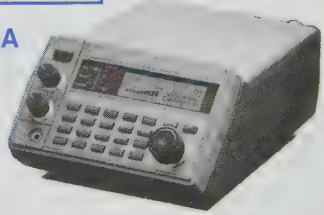
Order #2184 **$22.95** (+$4)

STANDARD CCR708A

The Standard CCR708A covers 50 - 904.995 MHz (less cellular) in AM, FM-N and FM-W. The built-in LCD spectral display lets you view 1000 kHz, 250 kHz or 100 kHz of spectrum. 1000 Memories are provided in 10 bands. With dimmer, tone, manual tuning knob, attenuator, whip and AC supply. Contact Universal for full details on this professional grade receiver. 7.1" x 3" x 7.1".

List $750.00 *Order #3413* **$729.95** (+$10)

AOR AR3000A



The AOR AR3000A offers high performance and wide coverage: .1 - 2036 MHz (less cellular) in FM-N, FM-W, USB, LSB, CW and AM. 400 memory channels are provided in four banks of 100 channels each. Each memory channel can store mode, frequency, RF attenuator setting and lockout status. The first channel of each bank may also be used as a priority channel. The scan rate is 50 ch. per second and search rate of 50 steps per second. Includes signal strength indicator. Runs from 13.8 VDC or with supplied wall adapter.

List $1329.95 *Order #3246* **$1029.95** (+$8)

An unblocked AR3000A is available for gov't. or export sales. Contact Universal for pricing. *#1079*

uniden Bearcat

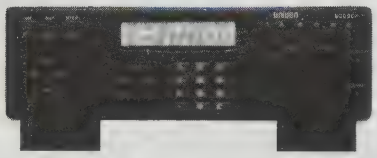
BC-3000XLT

- 25-550 MHz
- 760-1300 MHz (less cellular)
- AM, WFM, NFM
- 400 Memories
- 10 Priority Channels
- Automatic Store
- Channel Lockout Key
- Data Skip
- Attenuator
- Frequency Transfer
- Automatic Sorting

The BC-3000XLT 400 channel scanner offers exceptional coverage with super fast TurboScan scanning up to 100 channels per second. Tuning step increments can be selected at 5, 12.5, 25, 50 kHz or auto. Automatic store searches and stores frequencies to an available channel. Automatic sorting optimizes memory scanning. The data skip function skips over unwanted data transmissions and reduces birdies. Comes with NiCad battery pack, AC adapter/charger, flex antenna, belt clip and earphone. 7.4" H x 2.7"W x 1.5"D. 13.0 oz.
List $699.95 *Order #0970* **$399.95** (+$8)

Extra NiCad battery pack for BC2500 or 3000XLT.
List $39.95 *Order #0654* **$34.95** (+$3)

BC-890XLT



- 29 - 30 Ham Band-10 M
- 30 - 50 VHF Low
- 50 - 54 Ham Band-6 M
- 108-136 Aircraft
- 136-144 Federal Gov't
- 144-148 Ham Band-2 M
- 148-174 VHF High Band
- 216-400 UHF Air Band
- 400-420 Federal Gov't
- 420-450 Ham Band 70 Cm
- 450-470 UHF Band
- 470-512 UHF "T" Band
- 806-956 800 MHz Band (less cellular)

The BC-890XLT is a 200 channel (ten bank) scanner. The Automatic-Store feature searches and stores frequencies to an available channel. Scan at 16 or 100 channels per second. Features: channel lock-out, count key, weather alert and automatic frequency sorting. With jacks for: antenna (BNC), ext. speaker, record, aux. and 12VDC power. With telescoping whip antenna and AC adapter.
List $439.95 *Order #1076* **$269.95** (+$7)

BC-9000XLT

Similar to BC-890, but covers 25-550 & 760-1300 less cellular. 500 channels. Alphanumeric display.
List $769.95 *Order #1445* **$449.95** (+$8)

uniden Bearcat

SC-150

- 29 - 30 Ham Band 10 M
- 30 - 50 VHF Low
- 50 - 54 Ham Band 6 M
- 108-137 Aircraft
- 137-144 Federal Gov't
- 144-148 Ham Band 2 M
- 148-174 VHF High Band
- 406-420 Federal Gov't
- 420-450 Ham Band 70 Cm
- 450-470 UHF Band
- 470-512 UHF "T" Band
- 806-956 800 Mhz Band (less cellular)

The SC-150 Sportcat is a powerful yet portable 100 channel, twelve band scanner. Ten channel banks and 10 priority channels allow you to customize your scanning. The Turbo Scan feature allows scanning at 100 channels per second. The SC-150 has squelch control, instant weather, band search, scan delay, full illuminated LCD display, keypad lock, channel lockout, a rechargeable battery pack, BNC type flex antenna, belt clip, earphone and an AC adapter/charger. 6¾"H x 2½"W x 1¾"D. .77 lbs.
List $249.95 *Order #3346* **$199.95** (+$6)

uniden Bearcat

BC-220XLT

- 29 - 30 Ham Band 10 M
- 30 - 50 VHF Low
- 50 - 54 Ham Band 6 M
- 108-137 Aircraft
- 137-144 Federal Gov't
- 144-148 Ham Band 2 M
- 148-174 VHF High Band
- 406-420 Federal Gov't
- 420-450 Ham Band 70 Cm
- 450-470 UHF Band
- 470-512 UHF "T" Band
- 806-956 800 Mhz Band (less cellular)

The new BC-220XLT offers exceptional coverage with a 200 channel memory (in ten 20 channel banks with 10 priority channels). The Turbo Scan feature allows for scanning at 100 channels per second. The BC-220XLT has preprogrammed service search frequencies, programmable search mode, fully illuminated LCD display, keypad lock, weather key, delay key and channel lockout. Comes with NiCad battery pack, AC adapter/charger, flex antenna, belt clip and earphone. 6¾" H x 2½"W x 1¾"D. 12.6 oz.
List $439.95 *Order #3345* **$239.95** (+$7)

BCT-12 BEAR-TRACKER

This new pre-programmed (by state) scanner looks like a radar detector and covers VHF Low, Hi, UHF and 806-956 (less cellular). Even helps detect nearby PD vehicles. Only 3" x 1.3" x 5.5".
List $249.95 *Order #2784* **$179.95** (+$6)

BCT-7 BEAR-TRACKER

This new 100 channel, pre-programmed scanner covers VHF Low, Hi, Air, CB, UHF and 806-956 (less cellular). Has full digital display. Even helps detect nearby PD vehicles.
List $249.95 *Order #3414* **$179.95** (+$6)

uniden Bearcat

BC-235XLT

- 29 - 30 Ham Band 10 M
- 30 - 50 VHF Low
- 50 - 54 Ham Band 6 M
- 108-137 Aircraft
- 137-144 Federal Gov't
- 144-148 Ham Band 2 M
- 148-174 VHF High Band
- 406-420 Federal Gov't
- 420-450 Ham Band 70 Cm
- 450-470 UHF Band
- 470-512 UHF "T" Band
- 806-956 800 Mhz Band (less cellular)

The new BC-235XLT does something no other scanner has ever done before. It has the ability to track certain municipal trunking systems including Motorola's type I, II, IIi and hybrid systems. When the service you are listening to jumps frequency, the BC-235 has the ability to follow the signal. You won't miss any of the action. This scanner offers 12 bands of coverage and a 300 channel memory. Comes with NiCad battery pack, AC adapter/charger, flex antenna, belt clip and earphone. Exact price unknown at press-time. Please call.
List $439.95 *Order #0691* **Please Call**

AOR

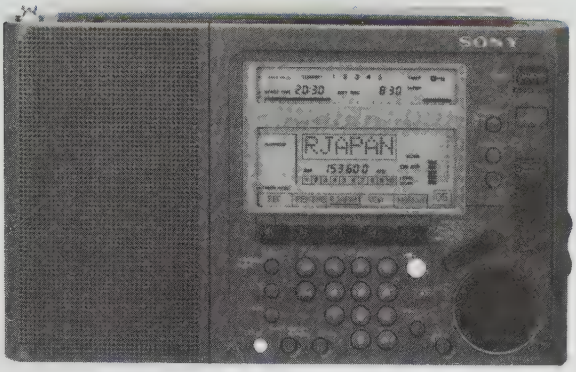
AR-8000

- 500 kHz-1900 MHz (less cellular)
- All Mode
- 1000 Memories
- 20 Search Banks
- Priority Channel
- Frequency Pass
- Rotary Tuning Dial
- Programmable Step Sizes
- Signal Strength Meter
- Band Scope
- Backlit LCD & Keypad
- Battery Save Function
- Attenuator
- Keypad Lock
- Monitor Switch
- Computer Control

The AR8000 is a highly sensitive hand-held receiver boasting a very wide frequency coverage of 500 kHz to 1900 MHz (less cellular). Step size is programmable in multiples of 50 Hz for smooth tuning. The all-mode reception provides AM, USB, LSB, CW, NFM and WFM. The high visibility LCD is of a new dot matrix format which provides four lines of display so that additional features may be displayed at the same time. Comes with NiCad battery pack, AC adapter/charger, flex antenna, belt clip, hand strap and DC lead with cigar plug.
List $799.00 *Order #0976* **$619.95** (+$8)

SONY

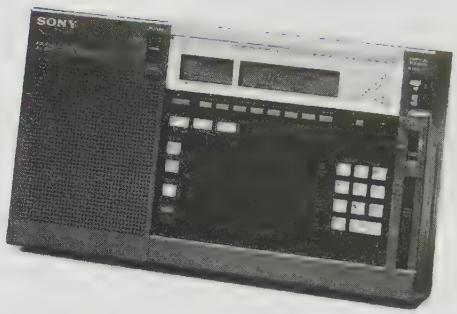
ICF-SW77



The Sony ICF-SW77 offers sophistication not previously seen in portable or table top receivers. On the performance side of the equation, this radio offers several useful circuits. A built-in programmable RF tuning unit allows the set to track a signal from the time the antenna first picks it up, while cutting out other signals and reducing interference. The SW77 incorporates a band pass filter that splits each band into five smaller bands, thus virtually eliminating interference from outside the band. Fifty Hertz tuning resolution permits precise signal tuning for maximum clarity (LCD resolution is 100 Hz). The advanced synchronous detection circuit effectively addresses the two biggest problems on shortwave: fading and interference from adjacent stations. The SW77 is also rich in features. *Station Name Tuning* is now a reality. 162 memories are available to store *your* favorite stations including: frequency, name (to six characters) and program times. Sony has preset 94 of these memory channels with the world's most popular SW stations. (You can over-write these factory-set memories). You select the station name and the radio will provide the best frequency based on the current time! The SW77 also includes all the expected features: excellent AM & FM bands, keypad entry, light, bass, treble, LSB/USB, ext. antenna jack, dial lock, S-Meter, manual tuning knob, frequency scanning, dual clocks, five-event timer, etc. Despite its advanced and many features, the SW77 provides a friendly "interface" between the listener and radio. Requires four C cells (not supplied). Includes adapter for 120 VAC operation, stereo earphones, carrying belt and AN-71 wind-up antenna. With: *Owner's Manual, How To Catch The Wave* and *Wave Handbook.* 11" x 7" x 2" 3.25 Lbs. (5¼ Lbs. ship). One year limited warranty.

Sony ICF-SW77 List $649.95 *Order #2493* **$469.95** (+$7)

ICF-2010



The ICF-2010 is not a new model, however, Sony continues to supply this respected veteran for DXer's seeking top performance in a portable package. It also offers the VHF aeronautical band, seldom found in other portable receivers. Direct access tuning is provided along with a multifunction LCD digital readout for unsurpassed convenience and accuracy. 32 Memories can be accessed via just one keystroke. A conventional tuning knob is provided for manual tuning. Convenient scan and memory scan tuning modes are also available. Continuous coverage from 150 - 29999.9 kHz in AM/SSB/CW and 76-108 MHz in FM is provided **plus** VHF air (116-136 MHz). Dual PLL quartz frequency synthesis ensures exceptional accuracy and stability. The LCD readout on shortwave reads out to 100 Hz (e.g.: 13973.4)! A switchable 12/24 hour clock is featured as well as an advanced program timer that can be set to turn the receiver on and off up to four times per day tuning in up to four different stations! Switchable wide or narrow IF bandwidth can be selected to minimize adjacent channel interference. Synchronous tuning locks in on weak stations. Record and earphone outputs are furnished. With built-in ferrite bar antenna for LW and MW and a telescopic antenna for FM, SW and AIR reception plus external antenna jack. Supplied accessories: AC adapter, earphone, shoulder strap, wire antenna, shortwave guide book and owner's manual. Two AA cells are required for either DC or 120 VAC operation. Three D cells are required for DC operation. 11 3/8" x 6 1/4" x 2 1/8", 5 Lbs. One year limited warranty.

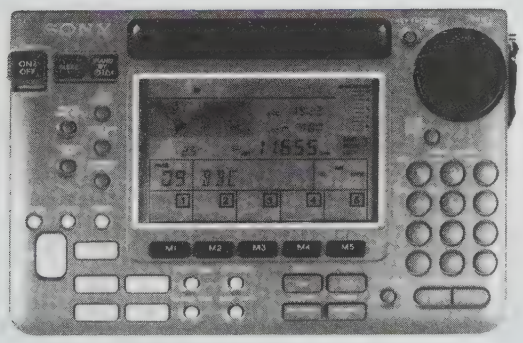
Sony ICF-2010 List $449.95 *Order #0841* **$349.95** (+$7)

Operate your Sony ICF-2010 from your car cigarette lighter.

Sony DCC-127A List $40.00 *Order #1292* **$34.95** (+$3)

SONY

ICF-SW55



Sony's model ICF-SW55 is receiving rave reviews. The ICF-SW55 covers longwave, AM, FM (76 - 108 MHz) and shortwave with excellent performance. Four tuning methods are available: preset station tuning, direct tuning, manual tuning and scan tuning. It features keypad entry, excellent LSB and USB reception, wide/narrow selectivity, signal strength display, low battery light, local-DX sensitivity switch, key protect, fast/slow/lock tuning, 1 kHz display resolution and station name tuning. The sophisticated alpha-numeric data memory system stores up to five frequencies per title (125 max). It has a unique dual display world time clock with alarm, sleep timer (15, 30, 45, 60 mins.) and five-event timer. The five event timer permits the radio to be programmed for up to 5 different frequencies at 5 different times, with the *remain-on time* setable from 1 to 199 minutes. By pressing the *World Time* button, time zone boundaries can be scrolled across the world map by the tuning knob, while the name of the major cities in that time zone appear on the LCD. External jacks are provided for antenna, earphones, recorder and remote. The ICF-SW55 comes with: AC adapter, AN61 wind-up antenna, stereo earphones, wave handbook, flip-out tilt 30 stand, soft radio case, and soft system case. 7¾" x 5" x 1½" (1 Lb 14 oz). We think the ICF-SW55 provides the best performance available in a small package. Requires four AA cells (not supplied). One year limited warranty.

Sony ICF-SW55 List $449.95 *Order #0972* **$349.95** (+$6)

Operate your Sony ICF-SW55, SW77 or SW7600G from your car cigarette lighter.

Sony DCC-E160L List $39.95 *Order #0921* **$29.95** (+$3)

SONY®

ICF-SW7600G

The Sony ICF-SW7600G is a compact, microprocessor-controlled, frequency synthesized general coverage portable receiver. Direct access tuning is provided along with a multifunction LCD digital readout for unsurpassed convenience and accuracy (1 kHz step tuning on SW, MW and LW). Just press the numbered keys to match the frequency you want to hear. Manual and automatic scan tuning are also provided. Twenty-two memories are provided for your favorite stations. The ICF-SW7600G tunes from 150 to 29995 kHz for solid coverage of longwave, medium wave and shortwave. Smooth SSB and Morse code reception is now provided through a switch with separate LSB and USB positions plus fine tuning thumb-wheel. A special *Synchronous Detector* circuit reduces fading and annoying "beat" frequency interference from adjacent stations as well as distortion due to fading shortwave reception. FM stereo (76 - 108 MHz) is provided to the mini stereo headphone jack. A record output jack is included for taping off the air. Advanced features include: dial light, LED tune indicator, tilt stand, keypad lock, 24 hour digital quartz clock with dual timer, Local-DX sensitivity switch, 9/10 kHz MW tuning switch, tone switch and external antenna jack. Supplied accessories include: vinyl case, AN-61 wind-up antenna and *Sony Wave Handbook*. Requires 6 VDC or four AA cells (not supplied). See optional AC-E60HG wall adapter listed on the next page. 7½" x 4¾" x 1¼" 22 oz. (3 Lbs. ship). One year limited warranty.

Sony ICF-SW7600G List $239.95 *Order #0760* **$169.95** (+$6)

ICF-SW33

Sony's model ICF-SW33 is designed for the traveler who wants a full coverage AM/FM/SW in a compact package. The SW33 makes an excellent travel clock radio too. Up to five local times in the world can be preset. You select either 12 or 24 hour format. Extended AM coverage from 530 to 1710 kHz (9 or 10 kHz spacing). Shortwave coverage includes: 3700-4200, 4650-5150, 5800-6300, 6950-7450, 9375-10000, 11525-12150, 13375-14000, 14975-15600, 17475-18100, 21320-21950 and 25475-26100 kHz. Shortwave stations may be tuned in 1 kHz steps. FM coverage from 76 -108 MHz. Mini output jacks provided for tape recorder or stereo headphones (not supplied). Useful features include: 17 memories (5 per band plus 2 *standby*), battery life indicator on LCD, tone control, scan tuning, Local-DX switch, dial lamp, tone switch and lock switch. Only 6¾" x 3¾" x 1¼" 15 oz. Includes: cloth case, AN-71 wind-up antenna, *Shortwave Guide*. Requires 4.5 VDC or three AA cells (not supplied). See optional AC-E45HG AC adapter listed below on this page. One year limited warranty.

Sony ICF-SW33 List $219.95 *Order #0024* **$149.95** (+$6)

ICF-SW30

The ICF-SW30 provides substantial dual conversion performance at a very affordable price. This stylish digital portable covers: medium wave (530-1710 kHz), FM broadcast and ten shortwave bands: 3700-4200, 4650-5150, 5800-6300, 6950-7450, 9375-10000, 11525-12150, 13375-14000, 14975-15600, 17475-18100 and 21320-21950 kHz. Tuning is accomplished via UP/DOWN buttons, 15 memory presets or automatic frequency scan. Shortwave display resolution is 1 kHz. The ICF-SW30 features a built-in local/world digital clock and 60 minute sleep timer. PLL quartz frequency synthesis and dual conversion superheterodyne circuitry combine to offer solid performance. The ICF-SW30 has: an LED tune indicator, sleep button, lock switch, 9 or 10 kHz MW tuning, tilt-stand bracket, Local/DX switch, tone switch and a 2 1/8" speaker plus a mono earphone jack (3.5 mm). Requires three AA cells (not supplied). The ICF-SW30 will also operate from 4.5 VDC. 6.75" x 4.375" x 1.375". 16 oz. One year limited warranty.

Sony ICF-SW30 List $139.95 *Order #2230* **$89.95** (+$5)

The Sony AC-E45 wall adapter allows you to operate the model ICF-SW30 or ICF-SW33 from 120 VAC house current.
(Please note: All AC adapters enjoy free shipping if ordered with a receiver.)

Sony AC-E45HG List $22.95 *Order #1632* **$19.95** (+$3)

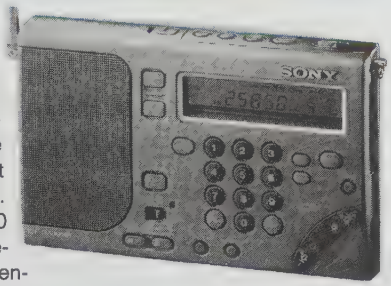
ICF-SW100S

The new Sony ICF-SW100S has all the features of a full-sized portable, but is small enough to fit into your shirt pocket. Frequency range covers from 76-108 MHz FM and LW/MW/SW/SSB from 150-29.999 MHz continuously. The PLL quartz frequency digital synthesized tuning is the world's most accurate drift-free tuning method and makes tuning-in desired stations simple and precise. The dual-conversion super heterodyne circuitry provides high sensitivity and interference rejection. A synchronous detector with selectable sideband is included to help reduce the effects of adjacent channel interference and fading. The world time clock feature provides local and 24-city name/time display. 50 memory station presets allow storage and recall of frequency and station name at a touch of a button. The auto scan feature allows scanning of available stations one at a time with a few seconds pause before resuming or can hold on a specific frequency. Other features include 1 kHz tuning, dual clock/alarm, LED tuning indicator, tone control and FM stereo via headphone jack. Requires two AA cells (not supplied). Comes with AC adapter, active antenna, stereo earpieces and carrying case.

Sony ICF-SW100S List $479.95 *Order #0111* **$359.95** (+$6)

SONY

ICF-SW1000T



The new Sony ICF-SW1000T combines a no-compromise portable worldband radio with a top-quality, feather-touch, **auto-reverse stereo cassette recorder**. Please note that the stereo cassette recorder is built into the back side of this radio. Coverage is from 150 to 30000 kHz to include all longwave, medium wave and shortwave frequencies. FM stereo coverage is from 76 to 108 MHz. Tuning and display resolution is down to 1 kHz on LW, MW and SW. Single sideband tuning resolution is .1 kHz. Selectable Synchronous Detection improves reception during periods of fading and interference. Recording can be made directly off-the-air or via the supplied stereo mike. The built-in 24 hour clock with alarm and sleep functions can make a tape recording while you sleep. Other features include: dial light, local-DX switch, frequency scanning, stereo-mono switch, tone button, 32 memories and external antenna jack. Includes: vinyl case, stereo earphones, stereo microphone, hand strap, wind-up antenna and *Sony Wave Guide*. Requires 3 VDC or three AA cells (not supplied). See optional AC-E30HG AC adapter listed below. 7" x 4.25" x 1.625" 1 Lb .4 oz. One year limited warranty.

Sony ICF-SW1000T List $699.95 *Order #1994* **$499.95** (+$7)

Sony AC-E30HG List $22.95 *Order #2013* **$19.95** (+$3)

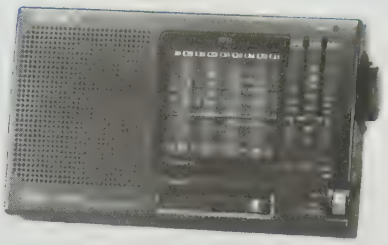
Please note: All AC adapters enjoy free shipping if ordered with a receiver.

EXTENDED WARRANTIES

Extended warranties are available for all Sony worldband radios. For only $19.00 you can extended your limited warranty from one year to three years. Please see page 99 of this catalog for full details.

SONY

ICF-SW10



The Sony SW10 analog portable covers LW, MW (530-1600 kHz), FM and nine SW bands: 4750-5150, 5850-6300, 7050-7500, 9400-10010, 11550-12400, 13450-14100, 15050-16000, 17400-18150 and 21350-22150 kHz. Features: 2¼" speaker, LED tune indicator and stereo earphone jack. Includes *Sony Wave Guide*. Requires two AA cells (not supplied) or 3VDC. 6 1/2" x 4½" x 1½" 12 oz. (1 Lb. ship). One year limited warranty.

Sony ICF-SW10 List $64.95 *Order #0323* **$49.95** (+$4)

Sony AC-E30HG List $22.95 *Order #2013* **$19.95** (+$3)

SONY

ICF-SW40

This new analog *and* digital portable covers LW, MW, FM and shortwave from 3850 to 26100 kHz. Features: 20 memories, DX/Local LED tune indicator, clock with sleep, external antenna jack and dial light. Includes cloth case. Requires three AA cells (not supplied) or 4.5VDC or optional AC-E45HG. 6.75" x4.25"x1.62" 15 oz.

Sony ICF-SW40 List $169.95 *Order #0140* **$119.95** (+$5)

Sony AC-E45HG List $22.95 *Order #1632* **$19.95** (+$3)

SONY

Antennas & Accessories

✦ **Sony DCC-127A Auto Power Adapter** *Order #1292* ..... **$34.95** (+$3)
This adapter permits operation from a car cigarette plug. Provides 3, 4.5 or 6 VDC. For use with Sony models: ICF-2003/2010/7600/7601/7700/PRO80/SW7600/800.

✦ **Sony DCC-E130L Auto Power Adapter** *Order #3367* ..... **$34.95** (+$3)
This adapter permits operation from a car cigarette plug. For models: ICF-SW10/100.

✦ **Sony DCC-E160L Auto Power Adapter** *Order #0921* ..... **$29.95** (+$3)
This adapter permits operation from a car cigarette plug. For models: ICF-SW55/77/7600G.

✦ **Sony AC-D3HG Wall Adapter** *Order #2260* ..... **$19.95** (+$3)
Use this 4.5 VDC adapter to operate models: ICF-2010 and Grundig Traveller 2 Digital.

✦ **Sony AC-D4HG Wall Adapter** *Order #1521* ..... **$19.95** (+$3)
Use this 6 VDC adapter to operate models: ICF-2002/2003/7600A/7601/7700/PRO80.

✦ **Sony AC-E30HG Wall Adapter** *Order #2013* ..... **$19.95** (+$3)
Use this 3.0 VDC wall adapter to run your Sony ICF-SW10/100S/1000T from AC power.

✦ **Sony AC-E45HG Wall Adapter** *Order #1632* ..... **$19.95** (+$3)
Use this 4.5 VDC wall adapter to operate models: ICF-SW15/30/33/40 and ICFM350V.

✦ **Sony AC-E60HG Wall Adapter** *Order #0713* ..... **$19.95** (+$3)
Use this 6.0 VDC wall adapter to run your Sony ICF-SW55/77/7600G from AC power.

✦ **Sony AN-102 Active Antenna** *Order #0122* ..... **$69.95** (+$3)
The Sony AN-102 is designed for radios that do not have external antenna jacks. Includes antenna module with 45" whip antenna, antenna controller box and two coupler cables. Requires four AA cells (not supplied). Comes in an attractive hard plastic case.

SONY

ICF-SW600

The new Sony ICF-SW600 is an on-the-go, affordable 12 band radio. Coverage includes longwave, medium wave (AM), FM and nine shortwave bands. Worldband coverage is: 4.75-5.15, 5.85-6.3, 7.05-7.5, 9.4-10.1, 11.55-12.4, 13.45-14.1, 15.05-16, 17.4-18.15 and 21.35-22.15 MHz. The LED indicator aids in station tuning. A 4" speaker and tone control combine to provide ample, pleasant audio. This full sized radio has a very full sized sound! The ICF-SW600 operates from four AA cells (not provided) or integrated AC transformer. That's right, you can plug it right into an AC outlet. 10"W x 5"H x 2.4"D 2.25 Lbs. With ear jack.

List $69.95 *Order #2700* **$54.95** (+$5)

GRUNDIG YB-400

The **Yacht Boy 400** is praised in the ***1994 Passport To World Band Radio*** as "Best performance for price/size category ... right up there with very best among world band radios." ***Passport'95*** rates the YB-400 as "The Compact model most preferred by our panelist in Eastern North America and Europe for listening to major world band stations." Coverage is complete including long wave (144 - 353 kHz), AM band to 1710 kHz and shortwave from 1711 to 30000 kHz. FM (87.5-108 MHz) is included with stereo provided to the headphone jack. A thumb wheel knob on the side of the radio provides smooth single side band (SSB) tuning. The illuminated digital display provides tuning resolution at 1 or 5 kHz on shortwave. Two bandwidths are featured. The narrow position affords maximum selectivity, or the wide position may be chosen for best audio fidelity. The keypad will quickly get you to any frequency or store up to 40 of your favorite stations in the presets. The presets may be accessed directly or you can scan through them by using the radio's second set of UP/DOWN buttons. The YB-400 can also frequency search. The dual digital clock is visible while the radio is playing. Other refinements include: snooze and sleep buttons, lock, HI/LOW tone switch, LOCAL/DX switch, and 9/10 kHz MW scan selection. External jacks are provided to earphone (3.5 mm), antenna (3.5 mm) and 9 VDC input. The YB-400 comes ready to go with six AA cells, stereo ear plugs, windup antenna, *Owners Manual, Grundig Shortwave Listening Guide* and vinyl carry case. 8"W x 5"H x 1.5"D. 1Lb 5 oz. Grundig's new lower price makes this one of the best values in world band radios. All Grundig world band radios carry a one year limited warranty.

Grundig YB-400 List $269.95 *Order #0040* **$179.95** (+$6)

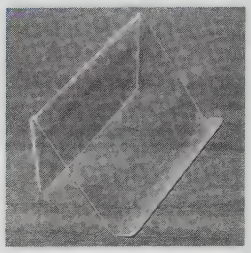
Grundig YB-400 Reconditioned *Order #1704* **$149.95** (+$6)
We also have a limited number of Grundig **factory reconditioned** YB-400s. These units are in excellent, like-new condition with all standard accessories and the regular Grundig one year limited warranty. Save $30!

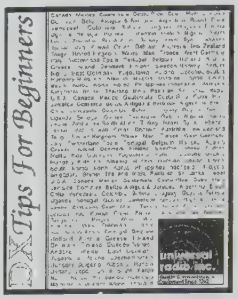
AC Wall Adapter for YB-400 *Order #1281* **$12.95** (+$3)
Permits Grundig YB-400 operation from 120 VAC. Saves your batteries. Not Grundig brand. (Free shipping on AC adapters if ordered with a radio).

FREE BONUS OFFER

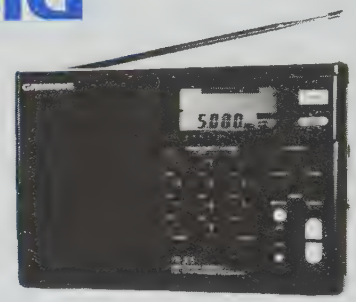
Receive the following items FREE from Universal with your purchase of a new or reconditioned Grundig YB-400:

- ***Lucite Radio Stand*** an $8.95 value.
- ***DX Tips for Beginners*** a $2.95 value.





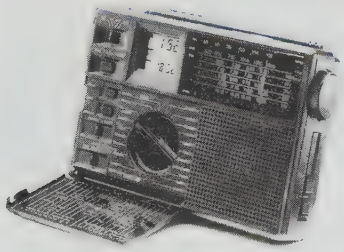
GRUNDIG YB-305



Grundig's new digital receiver, the **Yacht Boy 305,** offers continuous shortwave reception from 2.3 - 21.85 MHz plus AM and FM (FM stereo to headphone jack). The multifunction readout shows: frequency, band, memory and low battery. Features include: sleep-timer, 30 memories, memory scan, lock, DX-Local switch, tone, LED tune indicator, keypad, 9/10 kHz MW step and external antenna jack. This compact and sensitive receiver is great for travelling. The YB-305 includes: *Grundig Shortwave Guide.* Requires two C cells (supplied) or 3 VDC ⊖. 7.5"W x 5"H x 1.5"D
Grundig YB-305 List $159.95 *Order #3305* **$129.95** (+$5)

AC Wall Adapter for YB-305 *Order #3411* **$19.95** (+$3)
The Sony AC-D2HG AC wall adapter is just right for the Yacht Boy 305. (Free shipping on AC adapters if ordered with a radio).

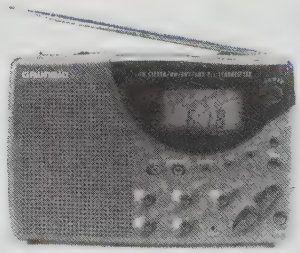
TRAVELLER II



The Grundig **Traveller II** analog receiver covers AM, FM and five shortwave bands: 5.8-6.2, 7.1-7.5, 9.5-9.9, 11.65-12.05 and 15.1-15.6 MHz. The Traveller features a 12/24 hour LCD world clock alarm-timer with sleep function. Under a special flip-cover, there is a 24 position rotary dial to select 24 major cities for quick indication of international times. Includes the *Grundig Shortwave Guide.* Requires three AA cells (not supplied) or 3 VDC. 5.5"W x 3.7"H x 1.4"D.

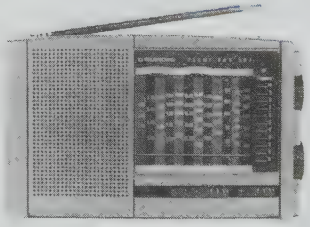
List $109.95 *Order #1293* **$89.95** (+$5)

TRAVELLER II DIGITAL



The **Traveller II Digital** is a compact digital portable that covers AM, FM and SW from 2.3-7.4 and 9.4-26.1 MHz. Tuning is via Up/Down buttons, auto search or via the 20 memories. The dual-time quartz clock, with sleep timer, wakes you to buzzer or radio. A dial light, lock button, 9/10 kHz MW step and stereo/mono switch round out the features. Includes FM stereo to earjack. With carry case and *Grundig SW Guide.* Requires three AA cells (not supplied) or 4.5 VDC ⊖. 5.5"W x 3.3"H x 1.3"D.
List $109.95 *Order #0337* **$99.95** (+$5)
Sony AC-D3HG AC wall adapter. *#2260* **$19.95**

YB-207



The affordable Grundig **Yacht Boy 207** analog pocket portable covers long wave, medium wave, FM and 9 shortwave bands: 3.9-4, 5.9-6.2, 7.1-7.5, 9.5-9.9, 11.65-12.05, 13.5-13.9, 15.1-15.6, 17.5-17.9 and 21.4-21.85 MHz. Mono FM to stereo mini-headphone jack. The YB-207 features a tune LED and is very easy to use. This model includes: a carrying case and *Grundig Shortwave Guide.* Requires two AA cells (not supplied) or 3 VDC ⊖. 7"W x 4.5"H x 1.5"D.

List $59.95 *Order #1857* **$49.95** (+$4)

SANGEAN

ATS-808

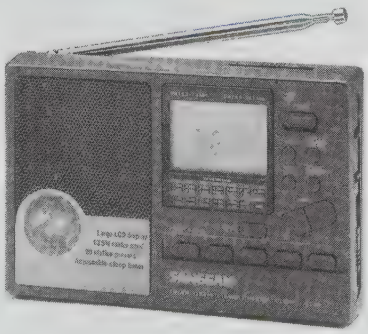
Smart styling, compact size and exceptional performance combine to make the Sangean ATS-808 a favorite. Coverage includes LW, MW, all SW and FM (stereo to headphone jack). Five tuning methods: keypad entry, auto scan, manual scan, memory recall and manual two-speed rotary tuning. The attractive tricolored LCD display shows: frequency to 1 kHz, signal strength, memory status, dual UTC-local clock and band. A wide-narrow selectivity switch really helps in the crowded shortwave bands. Other features include: hi-low tone control, wide-narrow switch, local-DX switch, external antenna jack (mini), 45 memories (18 for SW) and dial lock. Includes stereo earphones and case. 7¾" x 4½" x 1½" 2 Lbs. Requires six AA cells (not supplied) or optional ADP-808 AC adapter.

ATS-808 *Order #0351* **$119.95** (+$6)

Operate your Sangean ATS-808, ATS-800A or ATS-303 from 110 VAC wall current with the 6VDC adapter. (Free shipping if purchased with a radio).

ADP-808AC *Order #1665* **$8.95** (+$3)

ATS-303



If you want digital in a small and very affordable package, consider the ATS-303. Coverage includes AM, FM and 13 SW bands, or in semi-continuous mode from 2.3-7.3 and 9.5-26.1 MHz. Tune via the UP-DOWN buttons, automatic tuning or from the 20 memories. The large LCD display shows frequency or clock-timer information. Other features include: FM stereo to headphone jack, 9/10 kHz MW, low-battery indicator, stereo-mono switch, alarm by radio or buzzer, auto-scan, sleep-timer tune LED, dial lock and 6VDC jack. With: case and wave guide. Only 6½" x 4½" x 1½" 10 oz. Requires four AA cells (not supplied) or optional *#1665* ADP-808 AC adapter (see ATS-808).

ATS-303 *Order #0298* **$69.95** (+$5)

ATS-818CS & ATS-818

You have been waiting for a quality digital world band radio with a built-in cassette recorder. Now you have it in the exciting Sangean ATS-818CS. This no-compromise receiver has full dual-conversion shortwave coverage (1.6 - 30 MHz) plus long wave, AM and FM (stereo to headphone jack). A BFO control is included for smooth SSB and CW reception. A big LCD display with dial lamp shows: frequency (to 1 kHz on SW), 24 hour time, battery indicator and signal strength. The receiver features an RF gain, AM, tone, wide-narrow selectivity, keypad entry, manual tuning knob, plus 45 memories (18 for shortwave). Includes AC adapter, external antenna adapter and wave guide. The recorder has a built-in mic and auto-shutoff. Requires four D cells and three AA cells (not supplied). 11¼" x 7" x 2½". One year limited warranty.

ATS-818CS *Order #0367* **$199.95** (+$7)

The Sangean ATS-818 is the same as above except with a slightly larger speaker, and no cassette recorder. Also includes AC adapter.

ATS-818 *Order #2754* **$149.95** (+$7)

ATS-606/606P/606A

The ATS-606 covers 153 - 29995 kHz plus FM stereo. It has digital readout, 5 kHz SW tuning 45 memories & keypad entry. With *Auto Tune Scan* all memories are preset in order of station signal strength on FM/AM/LW. A dual digital clock-timer alarm can show local and UTC. With dial light and lock switch. Requires three AA cells. 5¾" x 3½" x 1¼" 1 Lb. With: case, earbuds and SW guide.

ATS-606 *Order #0875* **$129.95** (+$5)

The ATS-606**P** package also includes the ANT-60 antenna and multi-voltage AC adapter.

ATS-606P *Order #1020* **$179.95** (+$5)

The new ATS-606A is similar to the ATS-606, but has 54 memories, 1 kHz SW tuning and DX switch.

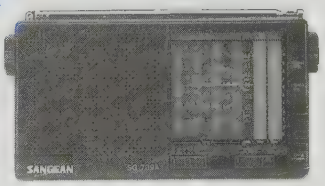
ATS-606A *Order #1916* **$149.95** (+$5)

ATS-909

The ATS-909 is the flagship of the Sangean line. It packs features and performance into a very compact and stylish package. Coverage includes all long wave, medium wave and shortwave frequencies. FM and FM stereo to the headphone jack is also available. Shortwave performance is enhanced with a wide-narrow bandwidth switch and excellent single side band performance (SSB tuning to 40 Hz steps via fine tuning). Five tuning methods are featured: keypad entry, manual tuning, auto scan, manual up-down tuning, memory recall or manual knob tuning. The alphanumeric memory lets you store 306 presets (260 shortwave, 18 AM, 18 FM and 9 LW plus priority). The 3 event clock-timer displays even when the radio is tuning and has 42 world city zones stored. The large LCD also features a signal strength and battery bar graph. The ATS-909 will display RDS on PL, PS and CT for station name and clock time in areas where this service is available. Also features a Record jack and Tone control. Includes AC adapter, carry case, stereo ear buds, wave guide and Sangean ANT-60 roll-up antenna. 8½" x 5½" x 1½" 2 Lbs. Requires four AA cells.

ATS-909 *Order #1909* **$269.95** (+$8)

SG-789A



The SG-789A analog portable includes AM, 8 SW bands (3.2-5, 5.85-6.2, 7.1-7.4, 9.35-10, 11.6-12.2, 15.1-15.8, 17.4-18 & 21.45-21.9 MHz) plus FM. Includes 3" built-in speaker, tune and stereo LEDs, stereo-mono switch and stereo ear phone jack. Requires three AA cells or 4.5 VDC adapter (both optional). With: case and wave guide. Size: 6¾" x 3½" x 1½".

SG-789A *Order #2153* **$44.95** (+$4)

ANT-60

The Sangean ANT-60 portable "roll-up" shortwave antenna will improve the reception of any portable worldband receiver. The antenna wire may be extended up to 23 feet (7 m). The ANT-60 terminates with a mini-antenna plug (3.5 mm). If your receiver does not have a mini external antenna jack, an adapter plug is provided to clip the ANT-60 to your radio's whip.

ANT-60 *Order #3184* **$12.95** (+$3)

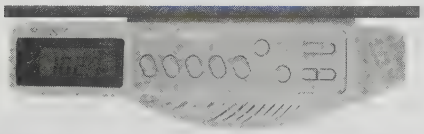
SONY

ICF-M350V

Here is an incredible value from Sony. This four band **digital** portable receives AM (530 - 1710 kHz), FM (87.5-108 MHz), VHF television audio (channels 2-13) *and* the NOAA weather band! (No SW reception). You can store up to five frequencies on each band for a total of twenty memories. The 3 inch speaker provides pleasant sound. Sony includes a lock button to freeze the radio's controls. The 12 hour digital clock-alarm continuously displays the time when the radio is off. This is the ultimate emergency radio for when the power fails. It also makes a great gift for that person who has everything! With 3.5 mm mono earphone jack and hand strap. Requires three AA cells (not supplied). 4.5 VDC. 7.75" x 3.75" x 1.35" 16 oz. (3 Lbs. ship). One year limited warranty.
List $59.95 *Order #1056* **$49.95** (+$5)

Sony AC E-45HG AC wall adapter for above. (Free shipping if purchased with radio).
List $22.00 *Order #1632* **$19.95** (+$3)

ICF-C503



Sony has designed the ICF-C503 advanced clock radio especially for the kitchen. All mounting hardware is included to make installation easy. Convenient front controls let you tune in a wide choice of AM or FM radio stations, listen to Weather band stations and even VHF TV audio. Includes twenty random station presets and count down timer. Makes a great spousal peace offering when you order your next big rig.
List $54.95 *Order #3299* **$44.95** (+$5)

SANGEAN

SR-77

The tonal quality and bass response provided by this tiny AM/FM/FM stereo radio will amaze you. Plays into stereo ear buds provided. At only 3" x 1½" x ½" it is a marvel. Requires one AAA cell.
List $29.95 *Order #2133* **$24.95** (+$3)

ICF-C1100

This AM/FM analog clock radio was really designed with the traveller in mind. AM coverage is 530 to 1605 kHz and FM tunes from 87.5 to 108 MHz. The ICF-C1100 is a compact 4" x 3" x 1.25" and weighs only 6.4 ounces. It has a sophisticated backlit LCD world time clock display. It wakes you to the radio or a buzzer. A 59 minute sleep timer is also featured. Antennas include a built-in ferrite bar for AM, and a convenient telescopic antenna for FM reception. Requires two AAA cells (not supplied). One year limited warranty.
List $49.95 *Order #2644* **$44.95** (+$5)

ICF-C203

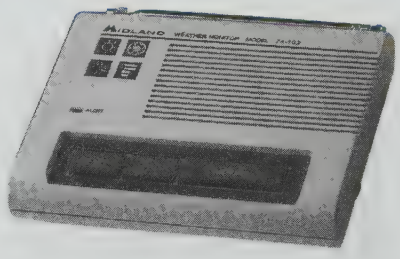
The ICF-C203 Dream Machine is the perfect AM/FM clock radio for working couples. Some of the key features include a dual alarm system permitting two separate wake-up times, 5 random station presets, wake-up station memory and one hour power backup (no battery required). Other features include dream bar and sleep timer.
List $42.95 *Order #3297* **$34.95** (+$5)

ICF-C303

Sony's modern technology combines quartz accurate PLL digital synthesized tuning, handy date display and convenient dual alarm in the new ICF-C303. Key features include seven random station presets, dual wake up stations, daily alarm canceller, 6 hour batteryless power back-up, dream bar, sleep timer and large backlit LCD display.
List $54.95 *Order #3298* **$44.95** (+$5)

MIDLAND

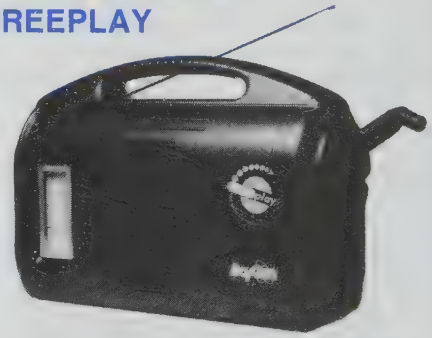
74-102



The Midland 74-102 is one of the best engineered weather receivers we have ever seen. It receives all three NOAA channels (162.420, 164.475 and 162.55 MHz). A special alarm circuit activates when the National Weather Service issues a weather emergency alert. The alert mode can be set for: LED only, alarm & LED or voice modes. A convenient test button lets you test the alarm. It features a telescopic whip *plus* has an external antenna jack. Install a 9V battery to ensure use during power outages. With AC power supply. 5.5" x 1.5" x 4.3"
List $39.00 *Order #3186* **$34.95** (+$4)

BayGen

FREEPLAY



You have never owned a radio like this before. The power source for this radio is you! The battery free *Freeplay* radio is the world's first radio to incorporate the ingenious Baylis generator which combines the latest in radio technology with the centuries old clockwork spring. Winding the crank for only 20 seconds provides 30 minutes of listening. This has to be the most ecologically friendly radio ever produced. Weighing less than 7 pounds, it is the ultimate camping or emergency radio. Here is assured radio performance, day or night without the worry (and expense!) of batteries. Coverage includes AM from 520 to 1600, FM from 88 to 108 MHz and shortwave from 3000 to 12000 kHz. The built-in 3.5" speaker provides full sound. May also be operated from a 3 to 9VDC power source. 15.75" x 12.5" x 8" 6.75 Lbs. Six month limited warranty. Made in South Africa. Add the optional Sangean ANT-60 roll-up antenna shown on page 21 for increased performance.
List $119.95 *Order #3123* **$99.95** (+$5)

SUPERADIO III

The General Electric model 7-2887 *Superadio III* was designed specifically for long range AM and FM reception. It features tuned RF on both AM and FM for excellent sensitivity. Optimum selectivity is provided by 4 IF tuned circuits on AM and 3 on FM. A wide/normal switch allows you to control selectivity. Excellent sound is achieved via a 6½" woofer and 2" tweeter. Other features include an FM-AFC, separate bass and treble controls, mono mini earphone jack and fold-down carrying handle. A built-in 7 7/8" ferrite rod antenna brings in distant AM stations. Screw terminals are provided for external AM & FM antennas. Coverage: 530-1700 kHz and 88-108 MHz with analog tuning. This radio is a favorite among medium wave DX'ers, out performing multiband radios costing many times more. Powered from 120 AC 60 Hz 3W or six D cells (not supplied). 12½"W x 10½"H x 4½"D. One year limited factory warranty.

List $69.95 *Order #0547* **$59.95** (+$5)

SANGEAN

DT-200V

If you enjoy listening to AM, FM and TV audio while on the go, you will love this radio. About the size of a pack of cigarettes, it will fit in your shirt pocket and receives AM, FM and FM stereo, plus VHF television audio. 19 memories are provided to store your favorite stations. Tuning on all bands is easy with an up and down button. Scan Tuning will search the bands for you and stop for 3-4 seconds on each active signal. Other features include auto-shutoff, lock switch, removable belt clip, built-in speaker, stereo-mono switch, earphone jack (3.5mm) and lightweight stereo earplugs. Ninety day limited warranty. Requires two AA cells (not supplied). Coverage: 520-1710 kHz, 87.5-108 MHz and TV channels 2-13 (VHF). Size: 4 3/8"H x 2 5/8"W x 3/4"D. Weight approximately 5 oz. without batteries.

List $79.95 *Order #2605* **$59.95** (+$5)

DT-300VW

The production of the DT-300VW has been yet further delayed. Please contact Universal Radio to confirm the availability of this model.

Sangean has created a marvel of miniaturization in the announced DT-300VW. Imagine a pocket-sized *digital* receiver that receives AM, FM, FM stereo, VHF television audio *and* the weather band! You will use this radio at home, at work, while outdoors and as an excellent source of information during bad weather. 36 presets are provided to store your favorite stations. Tuning on all bands is easy with an up and down button. Scan Tuning will search the bands for you and stop for 3-4 seconds on each active signal. Other features include: auto-shutoff, LED tuning indicator, built-in speaker, clock, alarm and 1-180 min. timer, earphone jack (3.5mm) and lightweight stereo headset. Ninety day limited warranty. Requires two AA cells (not supplied). Coverage: 520-1710 kHz, 87.5-108 MHz and TV channels 2-13 (VHF). 4"H x 2.36"W x .81"D. Weight approximately 4 oz. without batteries.

List $99.95 *Order #3262*

SONY® SRF-M32

What an incredible value. Here is an AM/FM digital receiver with ten memories, smaller than a pack of cigarettes and under $35! The Sony SRF-M32 FM/AM Walkman is just right for anyone on the go who enjoys quality AM, FM and FM stereo listening. Only 3 1/8 x 2 7/8 x 1" and weighing in at 4 ounces, this radio won't slow you down! Five AM and five FM memories store your favorite stations. Even has a local/DX switch. Supplied with stereo headset and belt holder. A neat radio and a great gift for anyone. Requires two AAA cells (not supplied). One year limited warranty.

List $34.95 *Order #0355* **$32.95** (+$4)

UNIVERSAL ELECTRONICS, INC. *Communications Specialists*

SCPC-200

Attention C & Ku home satellite band dish owners! You can now receive hundreds of great SCPC audio channels and services on your system. The SCPC-200 takes only minutes to hookup. Receive the full range of audio programming on 950-1450 MHz from your satellite system. Enter the frequency and you are there. The SCPC-200 does not disable your video when in use. Includes direct frequency readout, automatic LNB drift compensation, digital frequency lock and service name on LCD. 50 channel nonvolatile memory stores your favorite programming. AC wall adapter and full programming list included. Output is to an 8 ohm speaker (not provided). Made in the U.S.A.

SCPC-200 *Order #2039* **$399.95** (+$8)

SPECIFICATIONS

Tuning Range	950 - 1450 MHz V & H
Tuning Steps	8 kHz with variable tuning
Input Frequency	950 - 1450 MHz
Input Impedance	75 ohm - coax cable
Audio Output	2.5 watts, 8 ohms
Companding	1:1, 2:1, 3:1 Automatic
Source Voltage	110 VAC or 12 VDC
In-Out Connectors	"F" type, 75 ohm
Tuning Display	LCD, Direct Read-Out
Tuning Control	microprocessor controlled, 50 channel memory bank.
Memories	50, nonvolatile, one touch
Dimensions	12"W x 1.75"H x 8"D
Weight	8 Lbs.

■ What is S.C.P.C.?

SCPC means single channel per carrier. They are found on C and Ku band (not DBS) satellite transponders; carrying a multitude of audio and data services. SCPC signals can have their own independent carrier and spot frequency throughout the transponder on which they are being carried. An SCPC signal has a very narrow bandwidth in comparison to a satellite video signal or traditional audio subcarrier.

JRC Japan Radio Co., Ltd. — ST-3

Not surprisingly, our finest communications headphones are made by the Japan Radio Corporation. Each earpiece, plus the headband, are padded for a luxurious feel. Excellent voice-CW response (20-18000 Hz) for exceptional clarity. The last headphones you will ever buy. Will work nicely with all communications receivers we sell. Black. 600 Ohms. With ¼" brass mono plug.

Japan Radio ST-3 Headphones
Order #0682..... **$69.95** (+$5)

KENWOOD — HS-5

The Kenwood HS-5 deluxe headphones offer comfort and performance at a modest price. Black metal and plastic. 8 Ohms. With ¼" mono plug.

Kenwood HS-5 Headphones
Order #0357..... **$69.95** (+$4)

ICOM — HP-4

The new Icom HP-4 monaural headphones are very light weight (1½ ounces!) and made specifically for use with the R-1 and R-100. 48 Ohm with 38" cord and mini stereo plug (not ¼").

Icom HP-4 Headphones
Order #1446..... **$19.95** (+$3)

KENWOOD — HS-6

The Kenwood HS-6 headphones are designed for the listener who prefers a very lightweight headphone. You may forget you have these on! Includes pair of spare ear pads. 100 - 10000 Hz response. Only four ounces. 12.5 ohm. With ¼" mono plug.

Kenwood HS-6 Headphones
Order #0358..... **$52.95** (+$4)

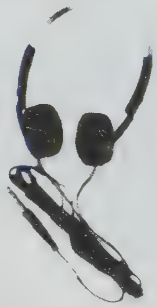
YAESU — YH-77

The YH-77's are featherweight headphones. Attractive grey - silver design with black sponge type ear pad. Adjustable. With ¼" mono plug.

Yaesu YH-77 Headphones
Order #0000..... **DISCONTINUED**

YAESU — YH-77ST

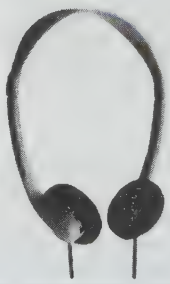
The YH-77ST's are light weight stereo headphones designed exclusively for use with the Yaesu FT-900, FT-990, FT-1000 and FT-1000MP transceivers. Adjustable. With ¼" stereo plug.



Yaesu YH-77ST Stereo Headphones
Order #2342..... **$47.95** (+$4)

SONY — MDR

These are hi-fidelity stereo headphones designed to work with the several portables we sell that support stereo output to a mini headphone jack. They are black in color and feature a light weight cord. 32 Ohms. Rated at 20-20000 Hz. Two ounces. With mini stereo plug only (not ¼").



Sony MDR Headphones
Order #2349..... **$8.95** (+$3)

HOW TO REACH UNIVERSAL RADIO

Mail: **Universal Radio Inc.**
6830 Americana Parkway Dr.
Reynoldsburg, OH 43068-4113

Phone: **800 431-3939** Orders & Prices
614 866-4267 Technical Info.

FAX: **614 866-2339**

E-mail: **dx@universal-radio.com**

Web: **http://www.universal-radio.com**

■ Unlike hi-fidelity headphones which are designed for maximum frequency response, communications headphones have a shaped response to enhance voice-CW frequencies only.

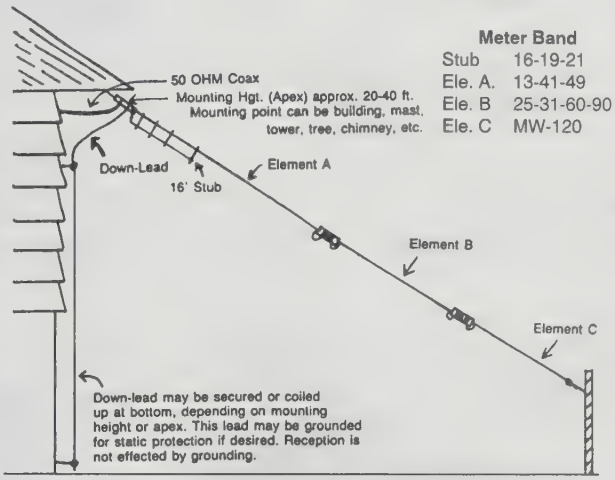
ALPHA DELTA

DX-SWL SLOPER

The Alpha Delta DX-SWL Sloper antenna offers exceptional features and performance! Hams have been using slopers for years because they offer some unique advantages not found in other antennas. Sloper (or slant) antennas require only one elevated support (25 feet or higher) while dipoles require two elevated supports. The DX-SWL Sloper offers coverage of the 90 and 120 meter bands, bands often "forgotten" by other antennas plus medium wave too! The DX-SWL covers:

Medium Wave .5-1.6 MHz.	120 Meters 2.3-2.5 MHz.	90 Meters 3.2-3.5 MHz.	60 Meters 4.7-5.0 MHz.
49 Meters 5.9-6.2 MHz.	41 Meters 7.1-7.3 MHz.	31 Meters 9.5-9.9 MHz.	25 Meters 11.6-12 MHz.
21 Meters 13.6-13.8 MHz.	19 Meters 15.1-15.6 MHz.	16 Meters 17.5-17.9 MHz.	13 Meters 21.4-21.8 MHz.

The overall length of the slope wire is only 60 feet long. A single 50 ohm feed point (for PL259) at the apex of the antenna is provided for maximum DX reception. (User supplies their own 50 ohm coaxial lead-in). The DX-SWL is fully assembled for easy installation. It requires no adjustments or "trimming". This American made antenna has stainless steel hardware for long life and utilizes low-Q RF choke-resonators for efficient multi-band frequency selection. For quality of construction, ease of erection and maximum performance, we think the Alpha-Delta DX-SWL is a great value.


Meter Band
Stub 16-19-21
Ele. A. 13-41-49
Ele. B 25-31-60-90
Ele. C MW-120
50 OHM Coax
Mounting Hgt. (Apex) approx. 20-40 ft.
Mounting point can be building, mast, tower, tree, chimney, etc.
Down-Lead
16' Stub
Element A
Element B
Element C
Down-lead may be secured or coiled up at bottom, depending on mounting height or apex. This lead may be grounded for static protection if desired. Reception is not effected by grounding.

Where less space is available, consider the **DX-SWL-S** shortened version - only 40 feet long covering the 90 through 13 meter bands.

Please see page 28 for optional preassembled coax lead-in cables.

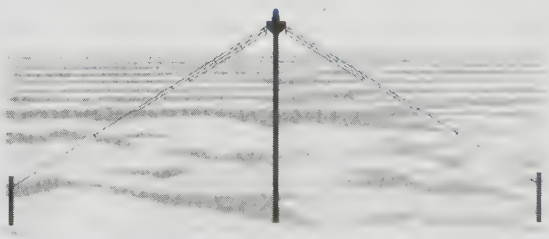
Alpha Delta DX-SWL (MW+120-13m) 60 ft.
Order #0799 ..... $**69.95** +($7)

Alpha Delta DX-SWL-S (90-13m) 40 ft.
Order #2533 ..... $**64.95** (+$7)

ALPHA DELTA

DX ULTRA

The Alpha Delta DX-ULTRA is specifically designed for high performance, *full spectrum* shortwave coverage plus MW. Absolutely remarkable low-noise, high-gain results are achieved as a result of the tapered wing design and ISO-RES inductors and parallel wire elements. The Delta-C Center insulator with built-in SEP Arc-Plug static protectors, provides protection for sensitive receiver components. This antenna must be center fed with a PL-259 type plug. Fully assembled - no cutting or soldering required.



Alpha Delta DX-Ultra (.5-30 MHz) 80'
Order #3377 ..... $**109.95** +($7)

Support poles shown, not included. Please see page 28 for optional preassembled coax lead-in cables.

ANTENNA SUPERMARKET

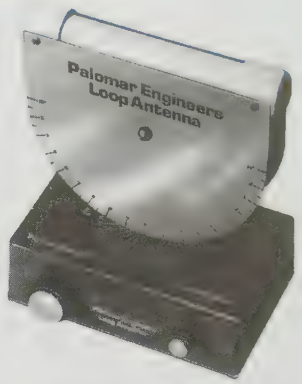
EAVESDROPPER SWL SLOPER

The Antenna Supermarket company, famous for their Eavesdropper trapped dipole, has just introduced a sloper antenna that covers all the major shortwave broadcast bands plus medium wave. It requires one high support like the DX-SWL above and ncludes PL-259 type fitting for user supplied lead-in. 67.5 ft. long. Now includes integrated lightning arrestor.
Note: Please see page 28 for preassembled coaxial lead-in cables.

Eavesdropper SWL Sloper
Order #0013 ..... $**74.95** +($6)

PALOMAR ENGINEERS

LOOP



While loop antennas generally have less gain than wire antennas, they do offer directionality and low noise reception. Rotating the loop can help eliminate interference or noise. Deep nulls permit the listener to "null out" nearby stations to permit DX reception. The loop can also facilitate direction finding. The Palomar LA-1 is the amplifier-mounting base which the various loops plug into. The LA-1 is 7" x 6" x 2" and is housed in a die-cast aluminum case. Controls include Tune and On-Off. Output is 50-75 ohms to a standard SO-239. The LA-1 will operate for a long time on a single 9 Volt battery (not supplied) since it draws only 3 ma. Each loop is designed to cover a certain portion of the frequency spectrum. The loops rotate 360° in azimuth and tilt ± 90° in elevation. HF1 element provides very low gain. You will need a short coaxial jumper cable to connect the LA-1 to your receiver (see page 28).

Palomar LA-1 Loop Amp-Base
Order #0445 ..... $**89.95**
Palomar Omega Loop 10-40 kHz
Order #0285 ..... $**79.95**
Palomar WWVB Loop 40-150 kHz
Order #1228 ..... $**79.95**
Palomar LF Loop 150-550 kHz
Order #1232 ..... $**79.95**
Palomar BCB Loop 550-1600 kHz
Order #0446 ..... $**79.95**
Palomar 160/80 Loop 1600-5000 kHz
Order #1276 ..... $**79.95**
Palomar HF1 Loop 5000-15000 kHz
Order #2265 ..... $**79.95**
Shipping on one or more of above $6.00

Kiwa

POCKET LOOP

The Kiwa Pocket Loop is a 13" aircore loop antenna that collapses to fit in your pocket. It is designed to enhance the reception of portable radios and no direct connection to the receiver is required. The supplied coupler slips over the whip antenna for SW reception and is simply placed next to the radio's internal antenna for AM reception. Operates effectively from .53 to >20 MHz in four bands. Requires 9V battery not supplied. 4" x 5" x 2".
Pocket Loop *Order #2909* $**114.95** (+$6)

ANTENNA SUPERMARKET

EAVESDROPPER DIPOLES

The Eavesdropper trapped dipole antenna is designed specifically for the shortwave broadcast listener. The Eavesdropper utilizes eight weather-sealed antenna traps so that it performs as though it were a number of separate antennas. Each trap is hand assembled and individually resonated to its proper design frequency. The Eavesdropper is fed at the center with 72 ohm balanced feedline (100 feet provided). The impedance to the receiver is 50-75 ohms balanced. Installing the Eavesdropper is simple ... merely unwind the elements and feedline, and suspend between two supports with the nylon rope provided. No cutting, measuring or soldering is required! Although the Eavesdropper is weatherized for outdoor use, it may be strung in an attic. The antenna utilizes heavy 14 gauge wire for maximum strength. The overall length is less than 43 feet. The Eavesdropper covers these major shortwave bands:

60 Meters (4.75- 5.06 MHz.)
49 Meters (5.95- 6.20 MHz.)
41 Meters (7.10- 7.30 MHz.)
31 Meters (9.50- 9.78 MHz.)
25 Meters (11.70-11.98 MHz.)

19 Meters (15.10-15.45 MHz.)
16 Meters (17.70-17.90 MHz.)
13 Meters (21.45-21.75 MHz.)
11 Meters (25.60-26.10 MHz.)

Lead-in (supplied with twin-lead model **only**)

The Eavesdropper is covered by a one year limited factory warranty. Made in the U.S.A. The Eavesdropper-C is identical to the regular Eavesdropper except that it includes a coax fitting (SO-239) and it does NOT include a lead-in cable. User must provide their own coax lead-in. Both models **include** an integrated lightning arrestor.

Eavesdropper Antenna With Arrestor
(Twinlead Type) *Order #0680* **$74.95** (+$6)

Eavesdropper-C Antenna With Arrestor
(Coax Type) *Order #2864* **$74.95** (+$6)

RF systems inc.

MLB-MK1/MK2

This may look like a conventional wire antenna kit at first glance, but it is much more. It consists of a heavy duty 41 foot wire, nylon rope and a quality insulator. At the feed-line end the antenna is terminated with the *RF systems'* patented Magnetic Longwire Balun. This balun permits an exceptionally low loss transference of antenna energy to your coax feed line. The result is significantly reduced static noise on long, medium wave and the tropical SW bands (60 & 90 meters). We have tested this antenna at Universal, and we are impressed. It is for *receive only* .1 - 40 MHz. Requires 50 ohm lead-in cable not supplied. (See cables on page 28).

MLB-MK1 *Order #1465* **$89.95** (+$6)

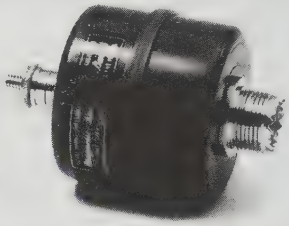
66 foot version of above for improved LW & MW.
MLB-MK2 *Order #0883* **$99.95** (+$7)

T2FD

The *RF systems* tilted terminated folded dipole covers 3 to 35 MHz with only 45 feet on length. Designed to provide much lower background noise than similar antennas. This passive antenna is assembled and ready to install. Has SO-239 jack to accept PL-259. Lead in not provided.

T2FD *Order #0562* **$249.95** (+$9)

MLB BALUN



The RF Systems' Magnetic Longwire Balun makes it possible to efficiently use a coaxial lead-in cable with all forms of longwires, T-forms or other types of wire antennas, without the need for an antenna tuner. A very low loss magnetic transfer of energy from the antenna to the receiver is accomplished and static noise is reduced. Your coax is much less susceptible to interference. For receive only: .1-40 MHz 50 ohm SO-239. Ask for free spec. sheet.

MLB *Order #1484* **$59.95** (+$4)

MLB MARINE BALUN KIT

The RF Systems' MLB Marine balun kit is designed to attach to an isolated stay or length of wire (18 to 90 feet) on a sailboat. The balun system consists of a 3.5" inch stainless steel cylinder attached to 45 ft of RG-58 coax cable (which may be shortened). This will result in an efficient, self matching antenna system for receive only in the range of 100 kHz to 30 MHz. The MLB Marine is completely waterproof. Ask for free spec. sheet.

MLB Marine *Order #1511* **$89.95** (+$6)

DX ONE PRO

The RF Systems' DX-One Pro is an omni directional vertical antenna covering 50 kHz to 50 MHz. Has MW suppression. 47" high 110VAC.

DX One Pro *Order #2097* **$549.95** (+$19)

B&W

ASW-60 C/L

The fully assembled ASW-60 SWL antenna covers: 11, 13, 16, 19, 25, 31, 49 and 60 meters It utilizes efficient traps and is only 35 feet wide. Complete with 50 foot of twin-lead feedline, 10 foot of guy line at each end and a pair of end insulators.

B&W ASW-60L *Order #2446* **$64.95** (+$6)

The model ASW-60C includes a SO-239 coax connector, but does not include any lead-in cable.
B&W ASW-60C *Order #0759* **$64.95** (+$6)

BUDWIG

DIPOLE INSULATOR

Constructing a dipole is easy with the HQ-1 center insulator. Attach each "arm" of your dipole to this device and then screw your PL-259 into the center! You get easy assembly, the best connection, the strongest support and the most weatherproof fit.

Budwig HQ-1 *Order #1782* **$6.95** (+$2)

Matching end-insulators. (Package of two).
Budwig HQ-2 *Order #3412* **$1.89** (+$1)

Van Gorden

END INSULATOR

The Van Gorden "dog-bone" end-insulators have high dielectric qualities, excellent strength and excellent weatherability. 2" long white. No charge for shipping on orders over $20.

VG Dog-Bone *Order #2379* **$ .89** (+50¢)

COAX-SEAL®

SEALANT

If you have **any** type of outdoor antenna you should be using Coax-Seal®. This black rubber-based material especially designed to protect any outdoor connection or connector. Coax-Seal is made of a non-conductive, non-contaminating waterproof substance that remains flexible at any temperature (from -30 to 180°F). Coax connectors are not waterproof and exposed solder connections can deteriorate! Coax-Seal is superior to electrical tape or vinyl sealant for moisture protection. One box (60" x 1/2") will protect nine connectors. No charge for shipping on orders over $20.

Coax-Seal *Order #1194* **$2.49** (+$2)

EMF

RF Systems' EMF passive wire antenna is complete and ready to go covering .1-30 MHz. Only 16 ft long and with 16 ft of coax and PL-259.

EMF *Order #0743* **$89.95** (+$5)

McKay Dymek

DA-100E & DA-100EM

The McKay Dymek DA-100E is a premium quality, general coverage active antenna. It provides excellent performance from .5 to 30 MHz. The DA-100E system consists of an outdoor preamp with 4'8" telescopic element, 50 foot of RG-58/U coax lead-in and control box (same configuration as MFJ-1024 shown below). The DA-100E can be run from 110-120 or 12 VDC (2.5 mm jack). A 110VAC wall-type power supply is provided. Output impedance is selectable at 50, 100 or 500 ohms. A three -position attenuator is also featured (0, 10 and 20 dB). The output jack to the receiver is an RCA phono jack. Ninety day limited warranty.

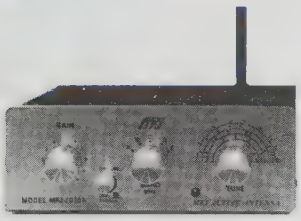
McKay Dymek DA-100E *Order #0328* **$179.95** (+$7)

The model DA-100EM is also available. It is designed for **marine** use. It utilizes a four foot, one piece fiberglass element in place of the telescopic metal whip on the regular version.

McKay Dymek DA-100EM *Order #0376* **$199.95** (+$9)

MFJ

MFJ-1020B



The MFJ-1020B indoor active antenna utilizes MOSFET technology for good performance from an extremely compact package. This antenna system can be set directly on your desk! The MFJ-1020B covers 300 kHz to 30 MHz in five bands. With built-in 21 inch telescopic antenna. An auxiliary antenna jack is provided. When it is used the MFJ-1020A functions as a preselector. Front controls include Gain, Band, Tune and Bypass. A LED indicates power on. Size: 5" x 2" x 6" with 21" whip. The auxiliary input and output jacks are RCA & SO-239. Requires 9 V battery or 9-18 VDC power supply (such as MFJ-1312B *Order #2433*).

MFJ-1020B *Order #1131* **$79.95** (+$4)

MFJ-1312B PS *Order #2433* **$12.95** (+$3)^

^Free shipping if ordered with the MFJ-1020B

MFJ-1024

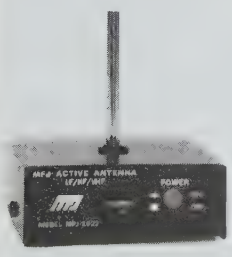
The MFJ-1024 is a sensitive outdoor active antenna covering 50 kHz to 30 MHz. The outdoor unit consists of a 54" telescopic whip & amplifier module (3" x 4" x 4). It is connected to the indoor control unit (6" x 2" x 5") by a supplied 50 foot RG-58 coaxial cable. The control unit features a 20 dB attenuator and a gain control to prevent receiver overload. A built-in receiver switch selects between two receivers and an antenna switch selects an auxiliary antenna. A red LED indicates power-on. The auxiliary input and output jacks are RCA phono type. Requires 12 VDC power supply (such as MFJ-1312 *Order #1588*).

MFJ-1024 *Order #1132* **$129.95** (+$5)

MFJ-1312 PS *Order #1588* **$12.95** (+$3)^

^Free shipping if ordered with the MFJ-1024

MFJ-1022

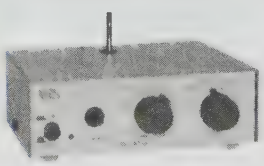


The new compact MFJ-1022 wideband indoor active antenna boasts coverage from 300 KHz to 200 MHz. Includes detachable 20 inch antenna. The output jack is an SO-239. Requires 9 V battery(not supplied) or 9-18 VDC power supply (such as MFJ-1312B *Order #2433*).

MFJ-1022 *Order #3109* **$37.95** (+$3)

VECTRONICS

AT-100



The AT-100 portable, active antenna covers from 300 kHz to 30 MHz. Works great indoors with supplied whip or may be used as an amplifier for your outside antenna. Tuned input reduces interferences and noise. Adjustments for gain, peak and band selection. RCA jacks for input and output. Requires 9 V battery. 1.75"x5.5"x4.75"

AT-100 *Order #3059* **$79.95** (+$4)

SONY

AN-1

The Sony AN-1 active antenna provides good reception over the range .15 to 30 MHz. The outdoor antenna amplifier module with 59 inch telescopic whip can be connected anywhere outdoors or even inside a window or attic. The Sony AN-1 includes 39 foot coaxial feed-line which connects to the compact control box. Output from the control box is to two alligator plugs or a mini plug. Requires six AA cells or optional T90S adapter.

Sony AN-1 Active Antenna *Order #2206* **$84.95** (+$6)

Sony T90S AC Adapter *Order #1281* **$12.95** (+$3)

Kiwa

MW LOOP

The Kiwa MW air core loop is a high performance antenna designed expressly for improved medium wave (AM band) reception and DXing. The Kiwa loop is designed with special features to improve reception under difficult conditions. These include a fully balanced design to improve nulling ability and to provide noise immunity. A regeneration control adjusts the antennas bandwidth, and a geared tilt control facilitates nulling signals. It's inherent narrow bandwidth is ideally suited for MW DX'ing. The Kiwa tunes from 530 to 1700 kHz and may be rotated and tilted for maximum signal pickup or precise nulling of local signals and interference. The -6dB antenna bandwidth may be adjusted from 15 kHz to less than 2 kHz for razor sharp selectivity. A Local/DX preamp switch is featured. Dual output amps provide drive for two receivers simultaneously. Supplied with low-noise AC supply or may be run from 12 VDC. Antenna coil: 12.75". Overall: 17"H x 18"W 14 Lbs. Beautifully made.

Kiwa MW Loop *Order #1251* **$349.95** (+$14)

Antenna Wire

■ **14 GAUGE STRANDED COPPER**
Excellent and very malleable. 7/22 construction. .072 nom. O.D.
Order #2588 ..... **18¢ per foot**

■ **12 GAUGE ENAMELED SOLID COPPER**
Low resistance and enamel coated for protection. .081 nom. O.D.
Order #2457 ..... **18¢ per foot**

■ **14 GAUGE COPPER-CLAD STEEL WIRE**
Hard drawn non-stretch steel center for excellent strength and copper-clad for protection and conductivity. .064 nom. O.D.
Order #2637 ..... **10¢ per foot**

■ **12 GAUGE COPPER-CLAD STEEL WIRE**
Hard drawn non-stretch steel center for maximum strength, and copper-clad for protection and conductivity. .081 nom. O.D. (Stiff!)
Order #2113 ..... **20¢ per foot**

Coaxial Cable

Coax cable is a key element in every receive system. It connects the radio to the antenna. All coax is not created equal! Our coax has a very tight (dense) braid to ensure maximum shielding. The jacket is of top quality vinyl to withstand the elements for many years of reliable service.

■ **RG-58A/U 50 OHM**
This is standard grade coax cable. .195 nom. O.D. -3.4 dB/100 ft.@100 MHz.
Order #2619 ..... **19¢ per foot**

■ **RG-8X 50 OHM**
This cable has similar low loss properties of the bigger RG-8, but without its thickness. Easy to work with. .242 nom. O.D. 3.0 dB/100 ft.@100 MHz. With non-contaminating black jacket.
Order #2247 ..... **23¢ per foot**

■ **RG-213 50 OHM**
This is a thicker lower loss coax cable that has a special non-contaminating jacket which will allow you to bury it safely. .405 nom. O.D. -2.0 dB/100 ft.@100 MHz.
Order #2929 ..... **44¢ per foot**

■ **RG-8/U LOW LOSS 50 OHM**
Super low loss type RG-8 coax. Stiffer than regular RG-8U. For long VHF-UHF runs. .405 nom. O.D.

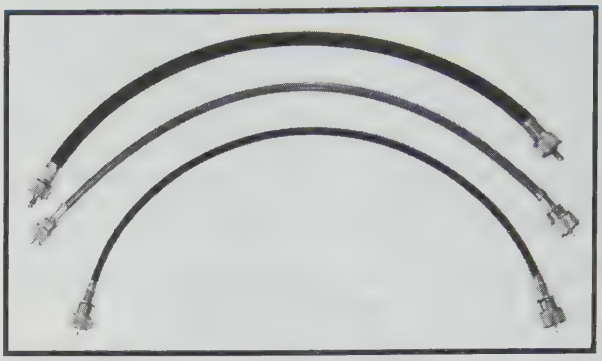
9086 Type
Order #0812 ..... **49¢ per foot**

Belden 9913
Order #0075 ..... **69¢ per foot**

■ **Flexi 4XLIIA**
Similar to *9086* and *9913* but constructed with a stranded center conductor for improved flexibility. .405 nom. O.D. -1.3 dB/100 ft.@100 MHz.
Order #0432 ..... **79¢ per foot**

Custom Coax Cables

As you add antenna accessories to your listening system, you will require coaxial "jumper" cables. If you add an antenna switch, a preamp or antenna tuner, you will need a jumper to connect the accessory to the antenna input of your radio. This is an important component of your antenna system. Don't let your jumper be the "weak link" in your monitoring installation. Universal offers a complete line of quality coaxial jumper cables. Here is why these custom cables are different from the ones at your local radio store:



- ❖ Each cable is made with high quality coax.
- ❖ The coax cable has 95% or better shield.
- ❖ The connectors are soldered for best conductivity.
- ❖ Each cable uses silver tip Teflon PL-259's.
- ❖ Each cable is individually tested twice.
- ❖ We offer 14 types of custom cables.

■ **RG-8/X Custom Coax Cables**
Moderate price, coupled with very low loss and good flexibility combine to make this a favorite among hams and SWL's. (.242" O.D.). Our biggest seller. With PL-259 connector at each end.

• **RG-8/X 12"**	PL-259 to PL-259 Custom Cable	*Order #2577*	**$4.49**
• **RG-8/X 18"**	PL-259 to PL-259 Custom Cable	*Order #2578*	**$4.99**
• **RG-8/X 24"**	PL-259 to PL-259 Custom Cable	*Order #2579*	**$5.49**
• **RG-8/X 36"**	PL-259 to PL-259 Custom Cable	*Order #2580*	**$6.49**
• **RG-8/X 25'**	PL-259 to PL-259 Custom Cable	*Order #0539*	**$14.95**
• **RG-8/X 50'**	PL-259 to PL-259 Custom Cable	*Order #0497*	**$19.95**
• **RG-8/X 75'**	PL-259 to PL-259 Custom Cable	*Order #0512*	**$24.95**
• **RG-8/X 100'**	PL-259 to PL-259 Custom Cable	*Order #0515*	**$29.95**

■ **RG-8/U Custom Coax Cables**
Although this cable is somewhat thick and inflexible it is very low loss; providing maximum efficiency. (.405" O.D.). With PL-259 connector at each end.

• **RG-8/U 24"**	PL-259 to PL-259 Custom Cable	*Order #1837*	**$6.99**
• **RG-8/U 36"**	PL-259 to PL-259 Custom Cable	*Order #1839*	**$7.49**
• **RG-8/U 48"**	PL-259 to PL-259 Custom Cable	*Order #1087*	**$8.49**

■ **RG-58/U Custom Coax Cables**
Economy with good flexibility (.195" O.D.). With PL-259 connector at one end and a male RCA phono plug at the other. Used for connecting tuners or active antennas with phono plug output.

• **RG-58/U 36"**	PL-259 to RCA Custom Cable	*Order #3043*	**$5.99**

■ **Special Order Custom Coax Cables**
Universal will custom make coax cables to your specifications for the price of the cable and connectors plus $5.00 per end for installation.

• **Special Order** Custom Cable		*Order #0569*

Ground Wire

The ground wire should be kept as short and as straight as possible. It should go to a ground rod (at least five foot long), or a cold water pipe (*not* a gas pipe!). Use quality copper ground wire.

■ **GROUND WIRE - 6 GAUGE SOLID COPPER**
Solid copper ground wire.
Order #0424 ..... **33¢ per foot**

■ **EQUIPMENT GROUNDING STRAPS**
Heavy braid with lugs. ¼" wide 18 inches long.
Order #0036 ..... **$2.99**

SHIPPING
WIRE & COAX

For shipping calculations wire and coax lengths may be combined:

1-100 Feet Total	$4.00
101-200 Feet Total	$6.00
201-400 Feet Total	$8.00
401-500 Feet Total	$9.00
501-700 Feet Total	$10.00

CUSTOM CABLES (<51 FT. LONG)

1-3 Cables	$5.00
4-5 Cables	$7.00
6-9 Cables	$9.00

ALPHA DELTA LT

Present day receivers utilize solid-state components and have very sensitive "front ends". These radios are much more susceptible to lightning and static problems than their tube-type predecessors. Fortunately, protection technology has improved. Unlike the old "air-gap" lightning arrestors, the Transi-Trap utilizes a hermetically sealed gas filled cylinder which has very reliable and predictable switching characteristics. In operation, the application of sufficient voltage across the element causes an arc to form between the sealed electrodes changing its impedance from greater than 10,000 megohms to a few milliohms in less than 100 nanoseconds! Unlike other suppressors, the Transi-Trap directs the discharged current to an isolated ground terminal versus the coaxial ground system. The Transi-Trap model LT has a replaceable plug. Protect your equipment. The LT is for receive and transmit up to 200 watts and under 30 MHz. The LT must be connected to an earth ground.

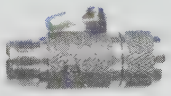
Transitrap LT *Order #1502* $27.95 (+$3)

Replacement cartridge for the LT.
Pill for LT *Order #1503* $16.95 (+$3)

The RT is for up to 200 watts and up to 500 MHz.
Transitrap RT *Order #1506* $34.95 (+$3)

The HV is for up to 2000 watts and up to 500 MHz.
Transitrap HV *Order #0795* $34.95 (+$3)

cushcraft LAC-1



The Cushcraft LAC-1 is a standard air-gap coaxial lightning suppressor. It will offer considerable protection to tube-type equipment, but may fall somewhat short in protecting solid-state receivers. The suppressor has a female SO-239 jack at one end and a male PL-259 at the other.

LAC-1 *Order #2046* $9.95 (+$2)

■ Many of our incoming repairs are a result of static buildup in the antenna from nearby storms or as a result of "spikes" in the AC power lines from nearby strikes. Most of these radios would not have been damaged if proper protection devices had been installed. Antennas should have lightning suppressors, radios should be grounded, and power lines should be filtered. We encourage you to protect your investment, and also enjoy the improved performance that these items will afford.

■ **Please Note:** All lightning suppressors must be connected to ground by appropriate wire to be effective. This wire should be heavy-duty ground wire (see wire section) and should not be too long or circuitous. The equipment should also be grounded. These devices are **not** designed to offer full protection in the event of a direct strike.

DEO RECEIVER GUARD

RG2000U

RG2000CTT

Lightning and static are not the only enemies of modern receivers! Sensitive receiver "front-ends" can also be damaged by nearby high power radio signals (RF). The ham across the street running 2000 watts into a beam antenna can generate enough RF in your antenna system to damage or desensitize your receiver. Other potential sources of high power RF are high powered CB operators, commercial radio and TV broadcasters and public service broadcasters. Hams who have separate receivers are also very susceptible to this problem (... ask our service tech!). Design Electronics Ohio has developed a series of diode-activated switching devices which will switch your antenna automatically to ground in the presence of a high-power RF field. The Receiver Guard 2000 series offers protection with very low insertion loss. This device has a replaceable protection element and is covered by a one year limited factory warranty. (Note: Protection element not covered by warranty). Uses standard SO-239 connectors (mates with PL-259s). Made in U.S.A.

RG 2000-U *Order #1305* $29.95 (+$3)

Note: The Receiver Guard 2000 series offers protection from high power RF through a very fast acting diode switching circuit. These devices do not change the performance of the set and do not offer lightning suppression (except CTT). Not for use with transceivers or transmitters!

Package of 3 replacement protection elements.
DEO Fuse *Order #0339* $6.95 (+$2)

RECEIVER GUARD 2000-CTT

The Receiver Guard 2000 model CTT combines the model "U" version with an Alpha Delta LT Transi-Trap device to offer both RF protection and lightning suppression. Shown above-right. This "combo" unit offers the maximum protection.

RG 2000-CTT *Order #1303* $49.95 (+$5)
Special *- if ordered with a receiver* $39.95

Most lightning damage doesn't come through the antenna, but through the AC line! A lightning strike even several miles away can cause a line transient (voltage spike) to flash through your AC line and damage your equipment. A fuse or circuit breaker will not act fast enough to stop the spike. Line filters contain circuitry to help protect valuable equipment from this common source of potential damage. We recommend line filters that clamp on all three lines (hot, neutral and ground). Note: these systems are designed to reduce the hazards of lightning induced surges and cannot prevent damage caused by a direct strike to an AC line or structure.

CENTEREX 60022

30022

This transient voltage surge protector plugs into a standard grounded two plug (duplex) wall outlet. It then provides six filtered grounded outlets. The filtering provides 340V spike protection with spike dissipation of 140 joules. Full line protection (H,N,G). For continuous duty up to 15A, 125 VAC. Surge response time: <10 nanoseconds. With pilot lamp indicator. Beige/ivory color. UL listed.

Centerex 60022 *Order #0653* $10.95 (+$3)

As above, but with 3 outlets instead of 6.
Centerex 30022 *Order #2800* $8.95 (+$3)

CENTEREX 74222

This outlet AC strip features 7, right-angle grounded outlets with an illuminated master on-off switch. 15 amp capacity for 120 VAC. A built-in resetable 15 amp circuit breaker is provided. Spike dissipation: 70 joules. Clamping spike voltage: 500 volts. Surge response time: <8 nanoseconds. Has noise filtration. Light beige plastic. UL listed.

Centerex 74222 *Order #2041* $11.95 (+$3)

66232

This 6 outlet terminal strip provides surge protection *and* noise filtration. It has an illuminated master on-off switch and a 15 amp circuit breaker. Spike dissipation: 150 joules. Clamping spike voltage: 400 volts. Surge response time: <10 nanoseconds. Full line protection: H-N, H-G and N-G. EMI/RFI rejection up to 15 dB. In beige metal. UL listed.

Centerex 66232 *Order #2502* $12.95 (+$4)

54163

This 5 outlet AC strip has a master on-off switch. It also features modular telephone jacks to protect a FAX or modem. 15 amp capacity for 120 VAC. Light ivory plastic. UL listed.

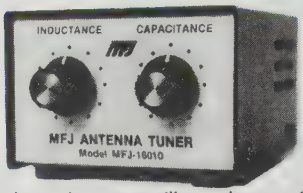
Centerex 54163 *Order #0146* $15.95 (+$4)

MFJ-956

This LW, MW and SW preselector tuner lets you boost your favorite stations while rejecting images, intermod and other phantom signals on your shortwave receiver. Operates from .15 to 30 MHz. Has bypass and ground positions. Uses standard SO-239 connectors. Size: 2" x 3" x 4".

MFJ-956 *Order #2964* **$37.95** (+$4)

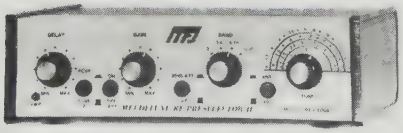
MFJ-16010



This random wire tuner will match any wire antenna to any receiver or transceiver. This device will match the impedance of your radio to the impedance of the antenna. Standard SO-239 connectors are provided. Controls are: Inductance and Capacitance. Compact size: 2" x 3" x 4".

MFJ-16010 *Order #1329* **$37.95** +($4)

MFJ-1040B



This preselector boosts signals from 1.8 - 54 MHz. It utilizes dual gate MOSFET, bipolar transistors for low noise and high gain. Push-button switches provide for two receivers, two antennas, 20 dB attenuator and ON/BYPASS. Controls for Delay, Gain, Band and Tune. It has a relay that automatically bypasses the amplifier when transmitting. Rear panel jacks provide for the use of either RCA phono plugs or PL-259 connectors. Size: 6" x 2" x 6". Requires 9-12 VDC (see MFJ-1312).

MFJ-1040B *Order #1140* **$94.95** (+$6)

MFJ-1312 PS *Order #1588* **$12.95** (+$3)^
^Free shipping with MFJ-1040

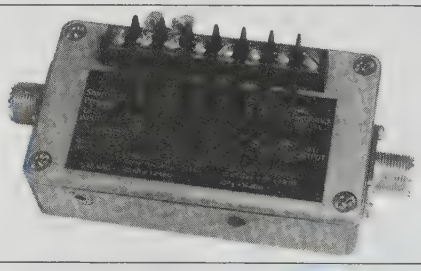
MFJ-959B

The MFJ-959 antenna tuner covers 1.6 to 30 MHz and features a low noise 20 dB preamp to bring out weak stations. It also matches the antenna to the receiver for maximum signal strength. It accommodates up to two antennas and two receivers. You can select tuner, tuner with preamp, tuner with 20 dB attenuator or bypass. Rear panel jacks provide for the use of either RCA phono plugs or PL-259 connectors. Size: 9" x 2" x 6". Requires 9-12 VDC power supply (see MFJ-1312).

MFJ-959B *Order #1643* **$89.95** (+$6)

MFJ-1312 PS *Order #1588* **$12.95** (+$3)^
^Free shipping with MFJ-959B

Kiwa SHORTWAVE PREAMP



The new Kiwa shortwave preamp amplifies shortwave stations from 1.8 to 30 MHz *and* rejects interference from the AM band (MW). It has excellent overload immunity. Requires 12 VDC. 50 ohm In/Out SO239. 4.5"x2.5"x1.5"

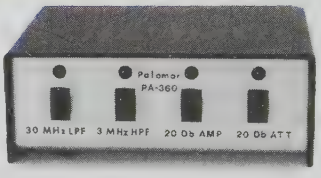
Kiwa Preamp. *Order #3213* **$94.95** (+$5)

JPS ANC-4

The ANC-4 is an RF device designed to provide cancellation of locally generated noise from signals received by a primary antenna. The unit is employed right at the antenna connector of the receiver to cancel noise from power lines, computers, TVs or nearby equipment. Controls are provided to allow adjustment of both phase and magnitude of the local interference, providing extremely deep cancellation of the offending noise. May also be used with transceivers with RF power under 150 watts. Operational range: .1 - 30 MHz. Uses standard SO-239 connectors. Requires 12 VDC @300 M.A. Size: 1.7"H x 6"W x 4.3"D.

JPS ANC-4 *Order #0094* **$179.95** (+$6)

PALOMAR ENGINEERS PA-360



The PA-360 "Amplifilter" is a combination of: • Amplifier with 20 dB gain (.1-1000 MHz) , • Highpass Filter @ 3 MHz, • Lowpass Filter at 30 MHz, and 20 dB Attenuator. Each of these four functions has its own panel switch and lamp, and may be switched in or out in any combination. Utilizes SO-239 connectors for input and output. Requires 12VDC power supply (such as Palomar PS-90).

Palomar PA360 *Order #0097* **$75.95** (+$4)

Palomar PS-90 *Order #1774* **$9.95** (+$3)^
^Free shipping with PA-360

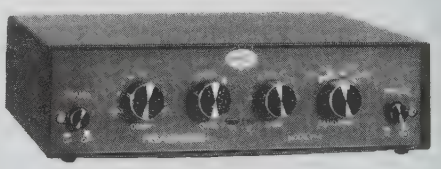
AMECO TPA

The Ameco TPA is a dual-function device. It is a sophisticated preamp covering .22 to 30 MHz with over 20 dB gain. The preamp features dual-gate FET circuitry and accepts input from a longwire, 300 ohm or random wire antennas. When an outdoor antenna is not available you can use the TPA as an indoor active antenna by extending the 30 inch built-in telescopic whip! Input from external antenna and output to the receiver is RCA phono jack. Runs on a standard 9V battery (not supplied) or with optional P-9T Adapter.

Ameco P9T *Order #0474* **$9.50** (+$3)^
^Free shipping with TPA

Ameco TPA *Order #1512* **$69.95** (+$5)

AMECO PT-3



The Ameco PT-3 preamplifier employs a dual-gate FET providing a low noise figure, thereby improving the weak signal performance of most receivers. Image and spurious rejection are greatly improved. Gain is in excess of 20 dB. Covers 1.6 to 56 MHz. The PT-3 can be used with a receiver or a transceiver (under 350 watts). The input and output impedances are nominally 50 ohms to match most antennas. Operates on 12 VDC or with optional P12T. Free shipping on Ameco adapters at time of purchase.

Ameco P12T *Order #0167* **$9.95** (+$3)^
^Free shipping with PT-3

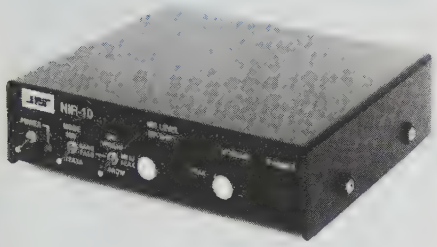
Ameco PT-3 *Order #2158* **$109.95** (+$5)

Preassembled cables to connect tuners and preamps are listed on page 28 of this catalog. Most commonly used are: *#2579* or *#3043.*

NIR-10

The NIR-10 allows reception of difficult to read signals. Operates on receiver audio outputs then provides its own volume-adjustable processed audio to an external 3 to 8 ohm speaker (not supplied). The NIR-10 reduces: white/pink noise, ignition noise, static interference, RTTY interference and power line noise. PEAK function reduces white noise interference. The Notch Filter mode removes multiple heterodynes and acts in 3 milliseconds. Band Pass mode has continuously adjustable center frequency, selectable bandwidths (.25, .6 & 1 KHz), vertical-skirted filters and greater than 60 dB ultimate rejection.

JPS NIR-10 *Order #2237* **$289.95** (+$5)



The NIR-10 SWL version is the same as above but features bandwidths of 1.8, 2.4 and 3.0 kHz.

JPS NIR-10SWL *Order #2721* **$289.95** (+$5)

Features *dual* DSPs to provide *simultaneous* filter, noise reduction and multiple tone removal.

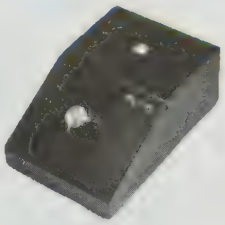
JPS NIR-12 *Order #2017* **$339.95** (+$7)

ne JPS AC to 12 VDC power supply powers any the JPS filters shown. (^Free shipping with filter)

PS PS *Order #3085* **$15.95** (+$2)^

McKay Dymek FC-11

The Dymek FC-11 *Fog Cutter* is a passive audio filter that connects between your receiver's headphone jack (or speaker jack) and your external speaker or headphones. It is powered by the receiver's audio signal and does not require batteries. It is simple to use with only one, six-position knob to adjust. The L-C network is effective in reducing hiss and improving speech intelligibility and fidelity. RCA jacks for input and output.



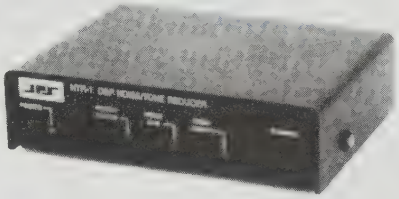
Dymek FC-11 *Order #3172* **$94.95** (+$4)

NF-60

he NF-60 Notch Filter removes heterodynes, W, RTTY, tune-ups and birdies. In fact, it otches out any and all constant or slowly varying ones present in your receiver's audio output ignal. Because the NF-60 uses Digital Signal rocessing in place of conventional circuits, it can uickly sense and remove many simultaneous ones in the passband while having a negligible ffect on the audio signal when no tones are resent. Conventional units may employ just one otch filter, but the NF-60's DSP filter algorithm utomatically provides as many extremely narrow otch filters as there are tones, simultaneously nd automatically removing all tones of all types. he unit operates on receiver audio outputs then rovides its own tone free audio from its built-in mplifier to an external 3 to 8 ohm speaker. Full ypass is provided when the power is turned off.

PS NF-60 *Order #1091* **$149.95** (+$4)

NTR-1



The NTR-1 is a general-purpose audio processing unit designed specifically to provide noise reduction and multiple tone removal for AM/FM reception, narrow band operation for SSB, CW, or data reception at an affordable cost. The unit uses Digital Signal Processing (DSP) to provide operating characteristics far superior to those attainable using analog techniques. Four push-buttons are provided on the front panel to make the operation of the unit as simple and user-friendly as possible. All functions are independent and may be used separately or together, as desired. It takes the audio from the receiver, converts it into a digital data bit stream, processes it, turns it back into an analog signal, and feeds it to an external 3 to 8 ohm speaker. All of this is done in "real time", so there is virtually no delay between input audio and output audio. JPS products are made in the U.S.A.

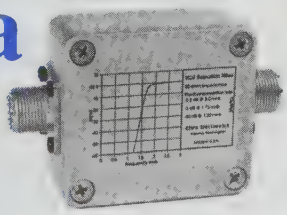
JPS NTR-1 *Order #1788* **$159.95** (+$5)

NRF-7

The NRF-7 general-purpose audio processing unit provides a number of functions that improve the receiving conditions for radio amateurs and short wave listeners. The unit reduces or eliminates atmospheric (white/pink) noise and multiple heterodynes. A dynamic peaking filter reduces the effect of white noise outside the audio bandwidth by creating individual and constantly-varying passband filters around speech components. This reduces white noise by dynamically excluding those portions of the passband that do not contain speech. The LED tuning indicator provided is usable in all filter modes to show when the desired signal is within the filter passband and operates whether the filter is engaged or not. The unit operates on radio receiver audio outputs then provides its own clean audio from the built-in amplifier to an external 3 to 8 ohm speaker.

JPS NRF-7 *Order #1804* **$199.95** (+$5)

Kiwa BCB FILTER



his high performance filter is designed for those who suffer from AM broadcast band interference. he BCB rejection filter is inserted between the ntenna and the receiver. Any signal below 1.7 Hz is heavily attenuated. A short PL-259 to PL-59 coaxial jumper is included. It is especially elpful to those who DX the lower shortwave equencies (< 7 MHz) where spurious AM band gnals appear. Input/output imp. is 50 ohms. sertion loss at 3 MHz is -0.5 dB. 2.5x2.25x1.5"

wa BCB Rej. *Order #3449* **$59.95** (+$4)

MFJ-784B

The MFJ-784B tunable DSP audio filter can *simultaneously* eliminate heterodynes, reduce noise *and* reduce interference in nearly any mode. You get 5 tunable DSP filters, plus 10 programmable filters. The automatic notch zaps hets, adaptive noise reduction reduces fatigue and the highpass-lowpass & tunable bandpass filters give you effective tolls to dig out the weak ones. Requires 10-16 VDC .5A (MFJ-1315). 9.5"x2.5"x6".

MFJ-784B *Order #3470* **$229.95** (+$6)

MFJ-1315 *Order #2928* **$14.95** (+$2)^

^Free shipping with MFJ-784B

MFJ-752C

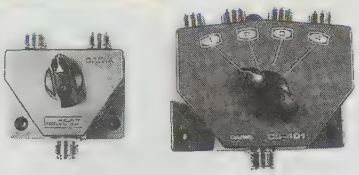
The MFJ-752C is a dual tunable filter that permits you to zero in on a SSB/CW signal and notch out interference at the same time. It can also be used for AM SWLing. Primary filter has tunable peak, notch, lowpass and highpass. Auxiliary filter has peak and notch. The filter is automatically bypassed when the unit is off. Speaker and phone jacks are provided. Requires 9-15 VDC @300 ma. Use MFJ-1312B power supply. 10"W x 2"H x 6"D.

MFJ-752C *Order #1124* **$94.95** (+$4)

MFJ-1312B *Order #2433* **$12.95** (+$2)^

^Free shipping with MFJ-752C

DAIWA CS-201/401



Daiwa switches utilize professionally engineered all metal cavity construction for maximum efficiency, high isolation and minimum resistance. Isolation is better than 50 dB at 300 MHz. Insertion loss less than .2 dB. The CS-201 (shown left) is a two position switch. Both the CS-201 and 401 utilize SO-239 connectors. Unused positions are grounded. 2.5 KW PEP. 0-600 MHz. 50 ohm.
Daiwa CS-201 *Order #1864* **$19.95** (+$3)

As above but utilizes 'N' connectors 0-1300 MHz.
Daiwa CS-201G *Order #2224* **$37.95** (+$3)

The CS-401 permits the selection of up to four antennas (shown above right). 0-800 MHz.
Daiwa CS-401 *Order #1865* **$109.95** (+$3)

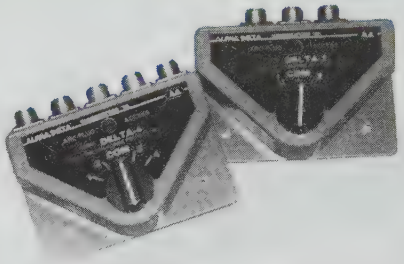
As above but utilizes 'N' connectors 0-1300 MHz.
Daiwa CS-401G *Order #0189* **$169.95** (+$4)

ALPHA DELTA

Alpha Delta manufactures precision antenna switches employing the latest high-tech design. Cast aluminum constant impedance cavities permit the switching of two or four antennas while maintaining a constant 50 ohm impedance. Silver-plated phosphor bronze micro strip construction ensures loss of less than .1 dB at 30 MHz with > 60 dB of isolation (.5 dB loss and 50 dB isolation at 450 MHz). The Delta switches offer three levels of surge protection! In the *common* position the common is disconnected from all antennas and all antennas are connected to ground. These switches feature a built-in surge protector. A replaceable D-4 Arc-Plug cartridge will divert harmful surges to ground. (Note: The Delta switches reduce the hazard of lightning induced surges. They will not prevent fire or damage caused by a direct strike). The Delta 2 and Delta 4 switches feature SO-239 fittings (for PL-259s). These American made switches are very well built.

The Delta-2N and Delta-4N switches are the same except with 'N' jacks instead of SO-239s. Made in the U.S.A.

DELTA SWITCHES



Alpha Delta Delta-2 Two Position Switch
Order #2415 ..... **$44.95** (+$3)

Alpha Delta Delta-2N Two Position Switch
Order #2108 ..... **$59.95** (+$3)

Alpha Delta Delta-4 Four Position Switch
Order #0011 ..... **$69.95** (+$3)

Alpha Delta Delta-4N Four Position Switch
Order #3014 ..... **$84.95** (+$4)

Alpha Delta D-4 Arc-Plug Replacement Pill
Order #0854 ..... **$8.95** (+$2)

MFJ-1702B/1704

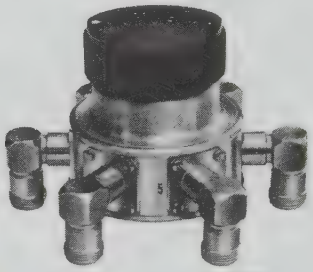
The MFJ-1702B two-position coax switch is similar to the Daiwa CS-201. 2.5 KW PEP 1 KW CW. 0-600 MHz. 50 ohm. SO-239. Blue color.
MFJ-1702B *Order #2811* **$19.95** (+$2)

Four-position version with static arrestor.
MFJ-1704 *Order #0362* **$59.95** (+$3)

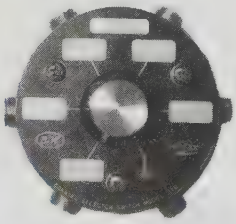
hofi SWITCHES

The German company, Hofi, makes the finest RF switches we have ever seen. This series can be used to 500 MHz and is rated up to 3000 watts on H.F.

Model	Order#	Description	Price
2016	*#1993*	5 Position N rotary 90 Note: Includes mounting bracket.	**$199.95** (+$5)

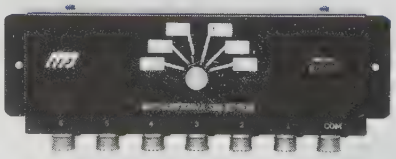


B&W CSR-5G



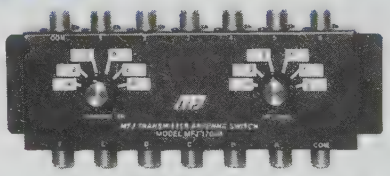
Barker & Williamson makes a fine selection of moderately priced quality switches. The Model CSR-5G allows you to select from five different antennas. After selecting the desired position all unused positions are grounded. This single pole, five position switch is radial mounted for easy one-hole installation in a box or console. SO-239 connectors used. Made in U.S.A.
B&W CSR5G *Order #1682* **$44.95** (+$3)

MFJ-1701



The MFJ-1701 allows you to switch between six antennas without disconnecting a connector. It can be used for 52 to 75 ohm systems. It uses seven SO-239 connectors. All unused terminals are automatically grounded for static-lightning protection. With mounting holes for desk or wall. May be used for transmitting up to 2000 watts SSB or 1000 watts CW. Black aluminum. 10" x 3" x 1.5"
MFJ-1701 *Order #1083* **$34.95** (+$3)

MFJ-1700B



If you have multiple antennas and multiple receivers, the MFJ-1700B is just for you! It can handle up to six receivers and six antennas. With mounting holes for desk or wall. May be used for transmitting up to 2000 watts single sideband or 1000 watts Morse code at 50 to 75 ohms. SO-239 type jacks. Black aluminum. 10" x 3" x 1.5"

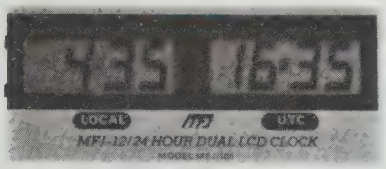
MFJ-1700B *Order #2098* **$64.95** (+$4)

■ Since no single antenna works best on all frequencies, many listeners use more than one antenna. Manually reconnecting antennas is cumbersome and time consuming, so an antenna switch is usually one of the first accessories added to the monitoring post. The antenna switch is a critical component of the listening system since it is switching very small current. A poorly designed or poorly constructed switch can introduce enough resistance to substantially attenuate the signal coming in from your antenna. Do not jeopardize your entire listening system with a poor antenna switch. Universal offers several high-quality switches for the DX'er who demands the best.

DIAMOND

A very high quality two-position switch (SO-239) for 0-1000 MHz. (1.5KW CW 0-30 MHz). 50 ohm.
Diam. CX210 *Order #1636* **$44.95** (+$3)

MFJ-107B/108B

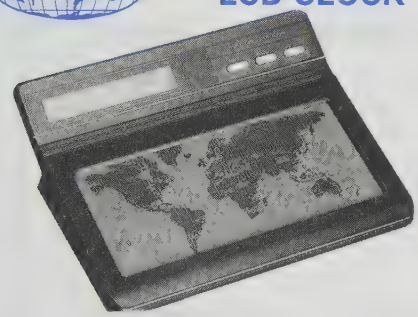


The MFJ-107B LCD clock features bold 5/8" inch numerals that display hour and minutes. Battery included. 2" x 1" x 2". The MFJ-108B features a dual display for both 24 hour UTC and 12 hour local time. 4" x 1" x 2".

MFJ-107B *Order #0895* **$9.95** (+$3)

MFJ-108B *Order #0990* **$19.95** (+$3)

UNIVERSAL LCD CLOCK

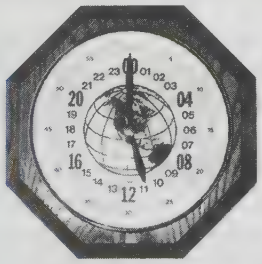


Touch any city or time zone to receive instant digital display of time, day and date in 27 time zones. Requires 2 AA cells (not supplied). Black.

Universal LCD *Order #2436* **$74.95** (+$4)

NI8F

WOOD 6"

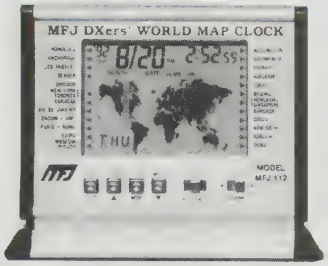


This handsome six inch wall clock with dark-stained wood back, hand-rubbed oil finish, polished brass hands and glass bezel with brass trim will add a touch of distinction to your radio room. The 24 hour quartz movement (requires one AA cell) provides accuracy of better than 15 seconds per month. (No second hand). Made in the USA.

Wood 6" *Order #1275* **$59.95** (+$6)

DISCOVER NOVUS VISA MasterCard

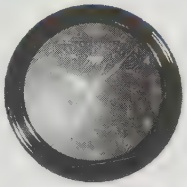
MFJ-112



The new MFJ-112 DXer's world map-clock not only shows you the time throughout the world, but it also indicates day-of-week, month, date and year through 2059. Push buttons let you move the display to any time zone on the world map. Attractive gold-tone brushed aluminum case. With 24 hour alarm. Special note: may be set for 12 or 24 hour format. Requires lithium battery (included).

MFJ-112 *Order #2704* **$24.95** (+$4)

MFJ-105B



The ten inch MFJ-105B 24 hour wall clock provides excellent visability, even from across the room. A single AA cell (not supplied) provides over one year of operation.

MFJ-105B *Order #3110* **$19.95** (+$4)

MFJ-116

The new MFJ-116 economy LED clock-alarm can operate in 12 or 24 hour format. The four digit .6" red LED display is easy to read. Also has 10 min. ID timer. Even has a 9 volt battery backup feature (battery not included). 110 VAC 60 Hz. Black 4.5"x2"x4".

MFJ-116 *Order #0727* **$14.95** (+$4)

MFJ-114

The MFJ-114 giant LED clock is incredibly large. This clock measures over 13 inches wide. The 2.3 inch LED display can be seen from 50 feet away. This monster can be set for 12 or 24 hour format and comes with an AC adapter (12 VDC). This clock can be set on a desk or hung from the wall. Two AA batteries (not supplied) provide backup power during power outages.

MFJ-114 *Order #2725* **$39.95** (+$7)

GC24

The Azimuth clock is just right for the listener that wants a 24 hour digital LCD clock with really large numerals. The big see-thru liquid crystal display is 3 1/8"W x 4 1/2"H and is mounted on a hi-tech brushed black metal stand. Requires a lithium battery (included).

GC24 *Order #3063* **$19.95** (+$3)

Benjamin Michael Industries INC

973A
962AD

The Benjamin Michael 12 inch 24 hour wall clock will add a professional touch to any listening post. It is quartz based with accuracy better than 15 seconds per month. With sweep second hand. Requires one AA cell (not supplied).

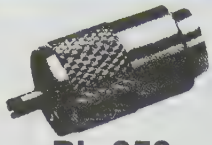
B-M 973A *Order #3026* **$44.95** (+$6)

As above, but 8 inch and 12 hour format with red secondary numerals for hours 13 through 24.

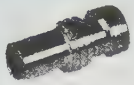
B-M 962AD *Order #1289* **$22.95** (+$5)

- In order to avoid the confusion of many time zones, hams, military, marine and international broadcasters always refer to time at the zero meridian called Greenwich Mean Time (which runs through Greenwich, England). This time zone is five hours ahead of Eastern Standard Time (4 hours ahead of Eastern Daylight Time). This 24 hour format may be also referred to as Coordinated Universal Time (UTC). For example 4:00 PM EST = 21:00 or 4:00 pm EDT = 20:00 UTC.

- As a shortwave listener you have access to ultra accurate time signals. The U.S. government transmits time signals every minute from station WWV in Boulder, Colorado. Listen for them on 2500, 5000, 10000 or 15000 kHz. Canadian listeners should try for CHU Ottawa on 3330, 7335 or 14670 kHz.



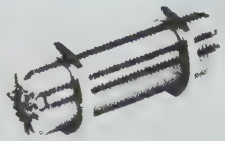
PL-259
UHF connector. Silver plated tip & Teflon
Order #2111...$**1.99**



UG-175
Reducer RG58/U
Order #2117...$ **.49**

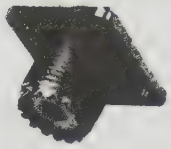
UG-176
Reducer RG59/8X
Order #2115...$ **.49**

PL-258
Barrel connector
Order #2791...$**1.99**



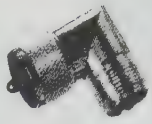
UG-363
Bulk head adapter
Order #2795...$**3.49**

Male-Male
UHF coupler
Order #2503...$**2.49**

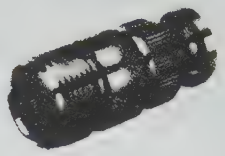


SO-239
UHF chassis. Teflon
Order #1426...$**2.49**

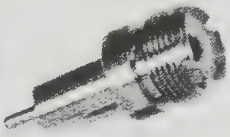
"T"
UHF connector
Order #1142...$**3.95**



90
UHF connector
Order #1121...$**3.49**

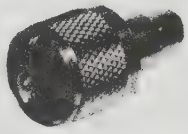


UG-255
SO-239 - BNC
Order #2122...$**5.89**

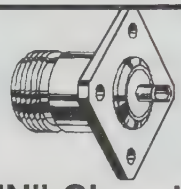


SO 239-RCA
Adapter
Order #2118...$**1.99**

SO 239-Mini
Adapter
Order #1619...$**3.49**

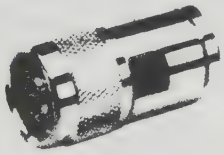


RCA-PL259
Adapter
Order #2690...$**1.99**



"N" Chassis
N Chassis Jack
Order #3379..$**4.95**

"N"
RG-59/RG-8X
Order #1853...$**4.95**



"N"
For RG-8, 213 & 9913
Order #0823...$**4.95**

UG-23
"N" female RG-8
Order #1852...$**4.95**

"N" Female
RG-59/RG-8X
Order #2946...$**4.95**

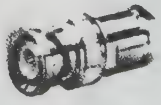
UG-594
90 "N" connector
Order #0405...$**4.95**

UG-57
"N" male-male
Order #0037...$**4.95**

UG-83
"N" female - PL-259
Order #1384...$**4.95**

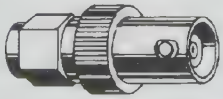
UG-146
SO-239 to "N" male
Order #3076...$**4.95**

UG-29
"N" barrel connector
Order #2760...$**3.95**



BNC
RG-58
Order #2376...$**5.95**

BNC
RG-59/8X
Order #2364...$**4.95**

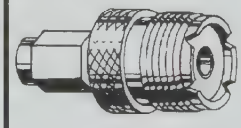


SMA-BNC
SMA Male to BNC Fem
Order #0531...$**5.89**

BNC-PL259
Adapter
Order #2124...$**4.95**

BNC 90
Right Angle Adapter
Order #0335...$**4.95**

MOTOR-BNC
Adapter
Order #1455...$**3.95**



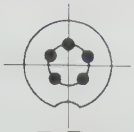
SMA-UHF
SMA Male to UHF Fem
Order #2976...$**4.95**

■ **Shipping** on all plugs and adapters is **free** if your total order (not including books, plugs or adapters) exceeds $20. If your order does not exceed this amount shipping is ☞

Qty. 1- 8 parts $2.00
Qty. 9-20 parts $3.00

2 Pin
Mic. connector
Order #1874...$**2.79**

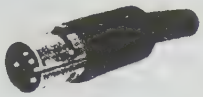
4 Pin
Mic. connector
Order #2400...$**2.99**



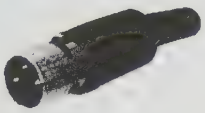
5 Pin
Mic. connector
Order #2401...$**2.99**

6 Pin
Mic. connector
Order #1919...$**3.19**

8 Pin
Mic. connector
Order #2112...$**3.99**



5 Pin
DIN plug
Order #1828...$**1.99**



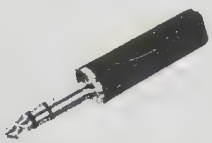
7 Pin
DIN plug
Order #2851...$**2.99**

8 Pin
DIN plug
Order #1395...$**3.29**

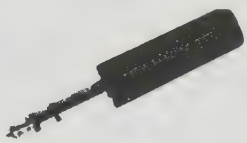
8 Pin
DIN plug-Kenwood
Order #2089...$**3.99**

13 Pin
DIN plug-Kenwood
Order #0954...$**4.99**

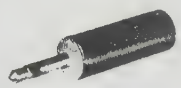
Phone 1/4"
Mono 1/4" phone plug
Order #1855...$**1.49**



Phone 1/4"
Stereo 1/4" phone plug
Order #0878...$**1.59**

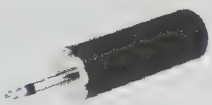


Phone 3/16"
Drake/Collins mic.plug
Order #2888...$**2.95**



Mini 1/8"
Mono mini plug
Order #0707...$ **.69**

Mini 1/8"
Stereo mini plug
Order #2310...$ **.99**



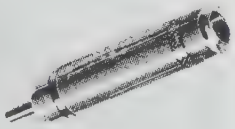
Sub Mini
Mono 3/32" plug
Order #1947...$ **.79**

Phono Plug
RCA phono plug
Order #2389...$ **.89**

Motorola
Antenna connector
Order #0305...$ **.79**

Banana Plug
Specify red or black
Order #1821...$ **.79**

RCA to 1/4"
RCA to 1/4" mono.
Order #1418...$**1.69**



1/4" to RCA
1/4" mono to RCA.
Order #1427...$**1.99**

Mini to 1/4"
Mini mono to 1/4"
Order #1434...$**1.99**

Mini to RCA
Mini mono to RCA
Order #1428...$**1.99**

RCA to Mini
RCA to mini mono
Order #1558...$**1.99**

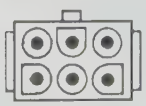
KOK1
Grundig antenna plug
Order #0199...$**4.95**

204
.051 I.D. power plug
Order #0910...$ **.99**

210
.085 I.D. power plug
Order #0821...$ **.99**

250
.097 I.D. power plug
Order #0963...$ **.99**

TC-777
Fused cigar-plug
Order #0402...$**1.99**



DC Plug
Kenwood / Icom
Order #1451...$**4.95**

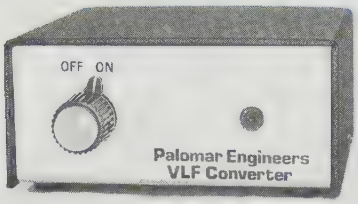
■ **Shipping** on all plugs and adapters is **free** if your total order (not including books, plugs or adapters) exceeds $20. If your order does not exceed this amount shipping is ☞

Qty. 1- 8 parts $2.00
Qty. 9-20 parts $3.00

VLF-A/S

PALOMAR ENGINEERS

RX-100



If your receiver covers 3.51 - 4.0 MHz you can enjoy the world of VLF/LF reception with the Palomar VLF-A converter. This device will permit the reception of the 10 - 500 kHz band which includes navigational beacons, standard frequency broadcasts, ship to shore, the 1750 meter ham band and even the European LW broadcast band (propagation permitting). Connects in your antenna line in minutes. Utilizes standard SO-239 connectors. 4.25"x 5" x 2". Requires a 9 V battery (not supplied) (12 ma). Note: you will need a short coaxial jumper cable to connect the VLF converter to your receiver - see page 28.

Palomar VLF-A *Order #0438* **$79.95** (+$4)

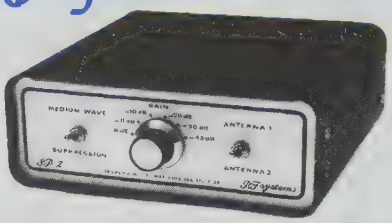
Same as above but converts to 4.01-4.5 MHz.

Palomar VLF-S *Order #2717* **$79.95** (+$4)

The Palomar RX-100 Noise Bridge is an invaluable aid in understanding, designing and maximizing antenna performance. This device will enable you to determine an antenna's resonant frequency and determine its resistance. It also reveals whether an antenna is too long or too short. Works with dipoles, quads, beams and is great for adjusting trap antennas. It is easy to use. Just connect the noise bridge to the antenna feed-point, then connect the bridge to your receiver with your coax line. Built-in heavy cast aluminum case with glass-epoxy circuit board and stainless steel hardware. A must-have device for antenna experimenters. Frequency range: 1-100 MHz. R-Range: 0-250 ohms. C-Range: ±70 pf. Connectors: SO-239s. Size: 4"x5"x1". Power: 9 V battery (not supplied).

Palomar RX-100 *Order #2768* **$79.95** (+$4)

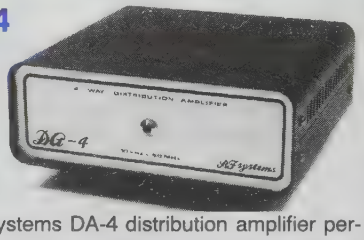
RF systems inc. SP-2



A growing number of DX'ers have two receivers, but only one antenna. The RF Systems SP-2 is a two-way antenna splitter for 50 kHz to 50 MHz. Unlike other units, the SP-2 offers a high degree of isolation between the two receivers (< 30 dB) to ensure independent tuning of each radio without interaction. A constant impedance attenuator offers six steps: 0, -6, -10, -20, -30 and -40 dB. This allows you to reduce the level of strong signals which can cause overloading, often allowing weak stations to be heard above the background noise. An effective MW suppression filter is also built-in. This is useful if you are troubled on SW by a nearby AM station. The unused antenna is grounded. Utilizes SO-239 jacks for both inputs and both outputs.

SP-2 *Order #2564* **$169.95** (+$6)

DA-4



The RF Systems DA-4 distribution amplifier permits using up to four receivers from one antenna without signal loss and with full isolation. For signals from 10 kHz to 30 MHz. Utilizes SO-239 jacks. Requires 100-130 VAC 50/60 Hz.

DA-4 *Order #0601* **$299.95** (+$7)

The similar DA-8 feeds up to eight receivers.

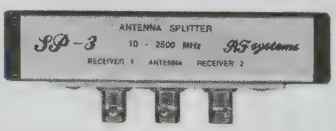
DA-8 *Order #3577* **PleaseCall**

SP-1

The SP-1 allows two shortwave receivers to be connected to one antenna without interaction and with minimal signal loss. Operational from .05 to 30 MHz. Uses three SO-230 jacks. Passive.

SP-1 *Order #1420* **$89.95** (+$5)

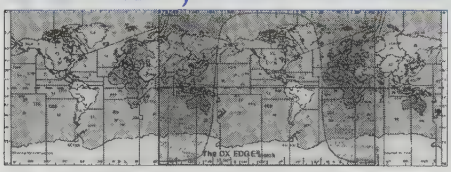
SP-3



The SP-3 allows two scanners to be connected to one antenna without interaction and with minimal signal loss. Operational from 10 to 2500 MHz. Uses three BNC jacks. Passive.

SP-3 *Order #0973* **$99.95** (+$5)

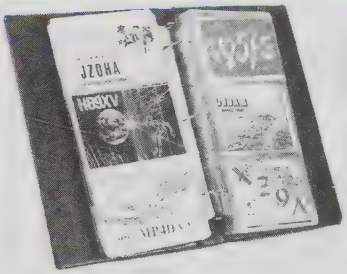
XANTEK, INC. DX EDGE



The DX Edge is an invaluable aid to the serious DXer who wants to understand and utilize dark path propagation and gray line effect. The DX Edge is a slide-rule device allowing you to determine quickly and easily those areas of the world that are in daylight and those in darkness at any time of day, any month of the year. It will help you: determine from what direction DX signals are coming, determine what parts of the globe are in darkness, determine sunrise/sunset times, determine gray line path - all without tables, charts or calculations! The DX Edge consists of a full color carrier and a set of 12 transparent slides (one for each month). A holder and full directions are also provided. Plastic carrier is 12"W x 4"H. Slides are 6"W x 4"H. Made in USA.

DX-Edge *Order #0059* **$19.95** (+$3)

QSL ALBUMS

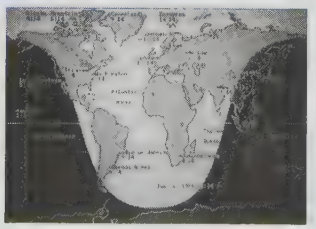


Protect, preserve and present your prized QSL's in a professional manner with an Azimuth QSL album. Each comes with 20 clear pages holding six 4" x 6" QSL's for a total of 120 cards per album. Each page is made of heavy-duty, abrasion-resistant PVC vinyl for easy viewing. The generic album and can be used for SWL or HAM cards. The DX Century Club album is also available.

Generic Album *Order #0589* **$19.95** (+$3)

DXCC Album *Order #2805* **$19.95** (+$3)

MFJ-1286



Here is an invaluable tool for shortwave and amateur DXers. The MFJ-1286 *Gray Line DX Advantage* is a *PC* program that predicts DX propagation. This program: • Predicts DX for all times-locations with an accurate display of the gray line, • Displays overhead position of the sun, • Detailed world map tracks the movement of the earth with the night portion shaded, • Displays UTC (GMT) in any of 24 locations, • Has high speed mode to let you change date/time. On IBM-PC type 5¼" diskette (only) with instructions.

MFJ-1286 *Order #0137* **$24.95** (+$3)

INTRODUCTION TO RADIOTELETYPE

Shortwave radio is filled with many exotic voices, but the excitement doesn't end here! There are many interesting stations that transmit text. Universal can help you upgrade your monitoring station to copy these "non-voice" modes.

MORSE CODE (CW)

One common non-voice mode is called Morse code (CW). Morse code is still used extensively by amateurs, coastal stations and the military. A few maritime coastal stations you may hear include:

VHP4	Canberra, Australia
UKA	Vladivostok, Russia
VPS60	Cape D'Aguilar, Hong Kong
JOU	Nagasaki, Japan
UMV	Murmansk, Russia
D4A6	Sao Vincente, Cape Verde
TIM	Limon, Costa Rica
SUH3	Alexandria, Egypt
LZW42	Varna, Bulgaria
A9M	Manama, Bahrain
LFB2	Rogaland, Norway

Many countries continue to utilize CW for unclassified military traffic. Stations you might log:

FUX	Fr. Navy	St.Denis, Reunion
GYU	Royal Navy	Gibraltar
CTU2	Port. Navy	Monsanto, Portugal
NAM	US Navy	Norfolk, USA
ZSJ4	S.Afr.Navy	Silvermine, S. Africa
FUV	Fr.Navy	Djibouti, Jibuti
4XZ	Israeli Navy	Haifa, Israel
EBA	Span.Navy	Madrid, Spain

Morse is also used by some aeronautical, commercial, and diplomatic stations as well as by amateur radio operators.

RADIOTELETYPE (RTTY)

Another mode by which text is transmitted is called radioteletype (RTTY). Most RTTY transmissions heard on shortwave use a RTTY format called "Baudot". The Baudot format represents each character with a series of 5 bits. Each bit is either a MARK (1) or a SPACE (Ø). Your radio will receive the MARK tone and the SPACE tone. The distance between the two frequencies is called the "shift". Common shifts on shortwave include 170, 425 and 850 Hz. There are hundreds of regular (Baudot) RTTY stations that can be heard, even on a modest shortwave receiver. The major types include:

Press Stations

Many commercial and government press agencies transmit "press" on RTTY... often in English. There is no faster way to get the news... it's like having a free wire service in your home! Press stations transmitting English include:

3MA33	China News Agency - Taiwan
VNA30	Vietnamese News Ag. - Vietnam
BZR66	Xinhua News Agency - China
LRO2	Telam Press - Argentina
SUA289	Middle East News Ag. - Egypt
YIX70	Iraqi News Agency - Iraq
HML60	KCNA News Agency - N.Korea
9BC22	Iranian News Agency - Iran
6VK317	PANA News Agency - Senegal
YZJ5	TANJUG Press- Serbia

Weather Stations

RTTY is used by aeronautical and weather stations worldwide. While some stations transmit "plain text", most transmit weather data using special "synoptic" codes. We offer the *Radio Data Code Manual* to help you decode, identify and understand these transmissions. Some RTTY weather stations you can expect to hear include:

UGE2	South Shetland Islands
FJY4	St. Paul & Amsterdam Islands
RUZU	Antarctica
TZH	Mali
TNL77	Congo
3BT4	Mauritius
LOK	South Orkney Islands
GHH	St. Helena Island

Military Stations

Many military stations use uncoded RTTY to pass non-sensitive traffic. Transmissions pertaining to weather, maneuvers and some clerical matters can be monitored. A sampling of military stations you may hear include:

NBA	US Navy	Balboa, Panama
MKD	Royal AF	Akrotiri, Cyprus
OBC	Peru Navy	Callao, Peru
ZRH	S.African Navy	Capetown, RSA
MKG	Royal Navy	London, England
NKW	US Navy	Diego Garcia

Other Services

Other services using radioteletype on shortwave include: diplomatic, research, commercial and maritime concerns. Radio amateurs also utilize several teletype modes.

SPECIAL RTTY MODES

Most RTTY stations transmit in the standard Baudot format previously discussed, but there are many other formats (protocols) used on SW. Another less popular format is ASCII in which each character is sent as a series of 7 bits. Most RTTY equipment can decode ASCII. Another more prevalent protocol is called TOR (Telex-Over-Radio). This is often referred to as Sitor A/B, ARQ, FEC or AMTOR. This mode is in wide use by maritime users and is also gaining popularity among the diplomatic and amateur services. This mode allows the sender and receiver to enjoy nearly error-free communication. The Info-Tech, M-6000 and the Universal M-900, M-7000 and M-8000 do a superlative job decoding this type of transmission. Other more exotic modes such as ARQ-M2, ARQ-E/E3, FEC-A, FEC-S, SWED-ARQ, ARQ-S, Piccolo, and Frequency Division Multiplex (VFT) are available to listeners utilizing our more advanced multimode demodulators.

EQUIPMENT

A good communications receiver is required for successful RTTY listening. Examples of acceptable receivers would be: Yaesu FRG-7/100/7000/7700/8800, Lowe HF-150/225, Kenwood R-1000/2000, Icom R-70/71A/72A and Drake R7/7A, SW8. Optimum receivers for RTTY would include the Watkins Johnson HF1000, Japan Radio NRD-345/515/525/535/535D, Drake R-8/8A, Kenwood R-5000, Lowe Europa and Icom R-8500/9000.

There are three methods used to copy radioteletype. All methods require receiver audio.

RTTY Readers

RTTY/CW readers are self-contained devices that decode and display the text on a 10 (or greater) character LED "billboard" display. ADVANTAGES: • Low price and • Compact size. DISADVANTAGES: • "Copy" is clearly not as good as on a "dedicated" unit, • Small displays, • Usually decode only basic modes, • Usually lack desirable features or controls, • Not suitable for advanced listening applications. CONCLUSION: • An easy inexpensive way to break into RTTY, but not suitable for serious RTTY work. NOTE: The Universal M-400/450 overcomes most of the usual reader disadvantages with: a two line display, printer port and wide variety of reception modes.

Computer Interfaces

Many personal computers can be made to copy RTTY with the addition of two things: 1. A computer interface 2. Special software. ADVANTAGES: • Low cost if you already own a computer, • Displays to screen of computer, • Many units will also transmit (for HAM use). DISADVANTAGES: • Overall performance is usually superior to a reader, but dramatically inferior to dedicated units, • Many computers emit serious RFI (interference) thus destroying the signal you are trying to copy. CONCLUSION: • If you already own a computer, this will be an inexpensive way to try RTTY. The computer-interface route will be adequate for the casual RTTY listener, but may fall short for the serious RTTY DXer. NOTE: The Universal M-1200 Decoder Card offers performance and features usually found only in dedicated units.

Dedicated Units

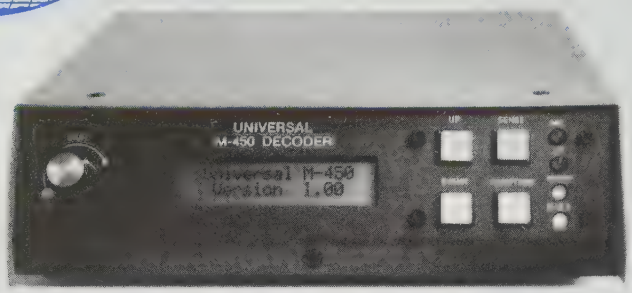
A dedicated unit is a self-contained free standing device designed expressly for the accurate reception of CW and RTTY modes. Examples would include: Info-Tech M-200F, M-600A, M-6000, Universal M-900, M-7000 and M-8000. DISADVANTAGES: • Dedicated units cost more. ADVANTAGES: • Clearly superior performance over readers or computer interfaces, • Full video display (video monitor not included), • Often include desirable extra features and controls including scope output, automatic threshold control, unshift on space, multiple scroll inhibit, screen dump, loop keying, RS232C output, selective calling, autostart, etc. • Work well for advanced applications including reception of Arabic, Russian third-shift Cyrillic and exotic modes. • Usually better equipped for satellite RTTY reception. • Do not suffer from potentially serious RFI problems usually associated with computer based systems. CONCLUSION: Although a dedicated unit costs more, this is certainly the preferred route for the serious RTTY listener. Universal Radio stocks used models at considerable savings. Please send a self-addressed stamped envelope to receive our *Used List* or view it on our web page.

REFERENCE MATERIAL

Quality equipment alone is *not* enough to be a successful radioteletype monitor. Knowledge, patience and experience are required. A good reference library of radioteletype books and lists is essential. Tuning RTTY without references is typically unproductive. We offer the finest and largest selection of books on RTTY to be found anywhere.

UNIVERSAL M-450

NEW



Many early teletype listeners started their monitoring hobby with teletype readers. However, readers have fallen out of favor in recent years because of their limited performance, limited mode coverage and lack of features. The Universal M-400 series was the first to break this trend, providing a high quality demodulator, extensive mode coverage, state-of-the art display and parallel printer port. The M-450 retains all the M-400 features and adds **a serial port** for easy connection to a personal computer if desired. The M-450 parallel port is also now bidirectional and may be used for a printer or for parallel control. This decoder is totally self contained; there is nothing else to buy. It is compact and operates from 12 VDC making it a natural for auto or boat installations. The two line liquid crystal display provides a (40) forty characters readout (not just 8 or 16 like other readers). This super-twist LCD can be read from any angle, and the front of the M-450 is sloped to provide the optimum in viewing and operating convenience. An 8000 character scrollable buffer stores incoming text for your review. LED indicators for *Mark, Space, Input* and *Data* are provided. A gray, all metal cabinet provides a solid look of quality. For the shortwave listener, the M-450 provides all the standard reception modes ... and then some.

● **SHORTWAVE MODES**

- **Baudot,** the original RTTY mode, can be copied in all five speeds (45, 50, 57, 75 and 100 baud). Baudot is used by some press agencies and weather stations.
- **SITOR A and B** are extremely popular teletype modes on shortwave. SITOR is used for communications between ships and coastal stations.
- **FEC-A** is a new press-diplomatic mode gaining wide acceptance primarily in Europe. Extensive FEC-A traffic can be monitored in North America during the day.
- **ASCII** at 75, 110 and 150 baud.
- **SWED-ARQ** This Swedish diplomatic mode can be copied in the U.S.A. during the day.
- **FAX** - That's right; with a graphics compatible parallel printer attached, you can copy FAX from shortwave. You can print weather maps and charts from around the world. The printer is optional. (FAX decoding is at 120 LPM, 576 IOC).

The M-450's shortwave capability is only half the story. The scanner enthusiast will also enjoy the M-450.

● **VHF-UHF MODES**

- **ACARS** Stands for *Aircraft Communications Addressing and Reporting System*. This new aviation teletype mode is in wide use at most major airports. Extensive traffic can be copied from both nearby commercial airports and aircraft. The M-450 is the first unit to offer this capability.
- **GOLAY** digital pager mode.
- **POCSAG, SUPER POCSAG** and **2400 POCSAG** digital pager modes. Now includes intelligence to dynamically sense and process digital numeric *or* alphanumeric pages.
- **DTMF** decoding of all 16 DTMF digits.
- **CTCSS (PL)** frequency decoding is also available. Read all 41 standard tones.
- **DCS** (*Digital Coded Squelch*, also referred to as *Digital Private Line*) all 104 standard codes.

The M-450 has several functions that you can program. With the use of an optional speaker, the M-450 can be programmed to pass only the audio you want to hear! You can set the M-450 to only activate the speaker when it receives a CTCSS, DCS or DTMF code of your choosing. The M-450 comes with an instructive *Owner's Manual* and 12 VDC wall adapter. Note: For best DCS and PL reception, direct connection to the receiver's detector may be required. One year limited warranty. Made in America by Digital Electronic Systems. The M-450 is *the* affordable accessory for every SWL or scanner enthusiast.

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #0710 ..... $19.00

PRICING

M-450 List Price $449.95
M-450 Discount Price
Order #0450 ..... **$399.95**
Shipping/Handling/Insurance $8.00

RECEPTION MODES

- **RTTY Baudot**
  45, 50, 57, 75 and 100 baud.
  60, 66, 75, 100 and 132 W.P.M.
- **SITOR A**
  ARQTOR, Amtor A
- **SITOR B**
  FECTOR, Amtor B, NAVTEX
- **ASCII**
  75, 110 and 150 baud.
- **SWED-ARQ**
  3, 9 or 22 character groups.
- **FEC-A**
  96 and 144 baud.
- **Facsimile (FAX)**
  120 LPM 576 IOC
- **POCSAG & SUPER POCSAG**
  Digital pager 512, 1200 and 2400 baud.
- **GOLAY**
  Digital pager mode.
- **ACARS**
  VHF Aviation teletype mode.
- **DTMF**
  16 digits
- **CTCSS (PL)**
  41 standard frequencies
- **DCS (DPL)**
  104 standard codes

SPECIFICATIONS

Dimensions	8.75"W x 2.5"H x 8"D
Weight	2 Lbs. (5 Lbs. ship with PS)
Display	LCD two line 40 char. total
Filter Tones	Low tone (mark = 1275 Hz) Fixed: 170, 425 and 850 Hz Variable: 100 - 1000 Hz
Power	11-16 VDC @ 250 ma AC wall adapter included.
Speaker Input	4-16 Ohms 100 MW max Mono mini jack (1/8")
Discriminator Input	10K Ohms .25V max Mono mini jack (1/8")
Speaker Output	Mono mini jack (1/8")
Parallel I/O	Parallel ASCII 8 bit Centr. May be configured to drive a standard parallel printer or may be programmed to connect to a PC parallel port
Serial I/O	RS-232 EIA Output DB-9 4800 baud, 8 data bits, no parity, 1 stop bit.
Control Program	A DOS based remote control program is provided on a 3½" diskette.

- An optional 6 foot cable for connecting the M-450 to a DB-9 Serial PC Port is *#0473* $3.95.
- If your PC has a DB-25 Serial Port, you will also need a DB-9 to DB-25 adapter *#3180* $3.95.

UNIVERSAL M-900v2 VF

The Universal M-900 was designed for the hobbyist or maritime user who wants an affordable compact unit that copies all the basic HF transmission modes. The M-900 receives Morse code to listen to maritime coastal stations or amateur radio operators (autorange 6 to 35 WPM). It also decodes regular Baudot RTTY still used by some international press agencies, weather stations and aeronautical concerns (45, 50 and 74 baud). Both SITOR A & B modes are included so you can read a vast amount of maritime and international diplomatic traffic. The FEC-A mode has recently been added (96, 144 and 192 baud). This is a popular "press" mode in Europe. Facsimile is the transmission of pictures, charts, maps, press photos, marine information and other documents. The M-900 VF yields high resolution facsimile images to the printer port and medium resolution to the monitor. It operates in line mode for weather map reception and gray mode for press photos in 16 shaded levels. (60, 120 and 240 LPM. 288 or 576 IOC. R to L or L to R. Positive or Negative).

LED indicators include: mark [MK], space [SP], error, data, squelch [SQ] and limiter [LIM]. In the RTTY mode the six push buttons control: normal-reverse [N/R], squelch [SQ], case change [CASE], shift up [UP], shift down [DN] and unshift on space [UOS]. The status line shows the operating parameters and features a tune for max. indication. In FAX mode the six push buttons control positive-negative polarity [POL], framing [FR], start [RUN], line-gray mode [MODE], IOC [IOC] and direction. Standard print features include multiple scroll inhibit (MSI), over print inhibit (OPI), automatic C/R & L/F and 8K print buffer. A DIP switch allows you to set a 40 or 80 character video line, a 16 or 22 line video page, a 50 or 60 Hz video refresh rate, high-tones or low-tones and a 9 or 24 pin printer. Power input is a 2.5 mm jack, audio input is a mini jack, video out is an RCA jack and the parallel printer port is a DB-25. For performance, price, size and ease of use, the M-900 is hard to beat! A complete system will require the following components: your receiver, audio cable and a composite video monitor. A dot matrix parallel printer is optional.

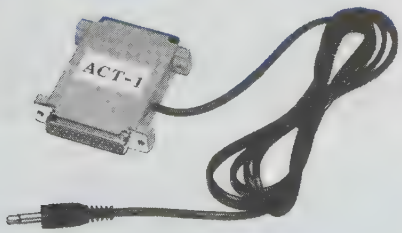
SPECIFICATIONS

Dimensions	9"W x 3 3/4"H x 13 1/4"D
Weight	5 Lbs. (7 Lbs. ship)
Power	12-16 VDC @ 800 ma
Audio Input	4 to 600 ohms .25 V p-p nominal
Printer Output	Parallel ASCII 8 bit Centr.
Video Output	Composite 75 ohms 1.5v p-p (50 or 60 Hz)

PRICING

M-900v2 VF List Price $549.00
M-900v2 VF Discount Price
Order #2042 ..... **$449.95**
Shipping/Handling/Insurance $8.00

UNIVERSAL ACT-1



FREE BONUS BOOK

A free copy of the book **UNDERSTANDING ACARS** will be included with your purchase of the Universal ACT-1. This book may also be purchased separately (please see page 88).

Much of the routine traffic once heard on VHF aeronautical voice channels has been replaced with a text transmission format called ACARS. ACARS stands for *Aircraft Communications Addressing and Reporting System.* This VHF teletype mode is used to transmit data and messages between commercial aircraft and airport ground stations. These transmissions at 131.55 MHz, can be heard on any scanner with the VHF aircraft band. Now you can combine your scanner and *PC* with our ACT-1 to decode this information that is on the air every day. The ACT-1 simply plugs into your PC computer's serial port. The user friendly software includes mouse support. You can view, filter, print and save this interesting aeronautical text traffic. You can also view, search and print previously logged data files. Minimum system requirements: 8088 CPU, 25 pin serial port, hard drive recommended. Get in on the aero action with the ACT-1 Aircraft Communications Terminal.

ACT-1 *Order #0032* **$99.95** (+$6)

CI-400 CAPTURE INTERFACE

The unprecedented intercept power of the Universal M-400 reader made it an instant hit. But like all readers, its limited display capacity can be restrictive in some applications. Advanced listeners also require connection to a personal computer for storage and examination of incoming text. Universal is pleased to offer the CI-400 capture interface. This complete kit permits the easy connection of the Universal M-400 (and most Universal dedicated decoders) to an IBM-compatible personal computer. The kit consists of: a special parallel interface (LPT2) that requires one empty 8 bit slot (no serial port required), a supplied 6 foot cable to connect the CI-400 Capture Interface to the M-400 parallel port and software provided on 3.5 inch 720K diskette. Software installation is fully automated. A 286 or high computer with hard drive, one available 8 bit slot, DOS 3.3 or greater, a 3.5" floppy drive, available IRQ 5, color monitor and mouse are required..

All incoming text from the M-400 is now routed and displayed to your computer screen. You can choose to view all text or just selected text based on up to five different SelCals (key words or labels) and up to two null filters (a null is a negative SelCal). Each day a file is generated to store all your incoming text for later storage and analysis. A built-in file viewer allows you to read and search these files. All text modes from your M-400 are supported (no FAX). The CI-400 provides a wonderful marriage between your M-400 and your PC. The CI-400 can also be used with other decoders having a parallel printer port such as the M-6000, M-7000 and M-8000.

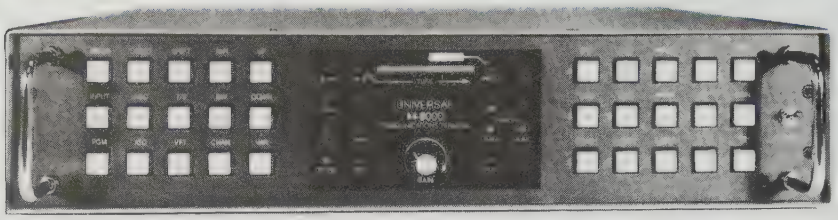
FEATURES

- Automated installation of software.
- Simple installation of parallel interface card (LPT2) does not require a serial port.
- No jumpers or other configuration required.
- Connects to parallel printer port of Universal M-400, M-6000, M-7000 or M-8000.
- On line help.
- Automatically saves text to a daily disk file.
- Easily switch from viewing all incoming text to filtered text.
- Alerts and/or prints for a maximum of five user-defined independent search strings SelCals).
- Two user-defined independent null strings block undesired messages (reverse SelCals).
- On screen visual and audio alerts informs you when a text match has occurred.
- Selective printing on matches allows the user to selectively route text to the printer.
- Integrated viewer allows you to view and search on previously saved files.
- Full 80 character, 25 line display.
- File print capabilities.
- Selective search settings are saved from session to session.

PRICING

CI-400 List Price $119.95
CI-400 Discount Price
Order #2857 ..... **$109.95**
Shipping/Handling/Insurance $5.00

UNIVERSAL M-8000v7



The Universal M-8000v7 features capabilities not available in other decoders. The M-8000v7 offers tremendous intercept power to let you listen to the exciting world of radioteletype and FAX on shortwave, VHF and satellite! The VGA color output permits the presentation of more information than ever before. The incoming text is displayed in a 26 line, 80 character format. A detailed double status line indicates all current demodulator and decoder settings. The lower left corner displays five bar-graph type tuning bars. A horizontal window at the bottom of the screen shows a continuously updated, spectral display. A square window in the lower right corner features a simulated X-Y tuning scope. The M-8000 decodes all the "standard modes" plus ARQ-M2/4 (TDM), ARQ6-90, FEC-A, FEC-S, ARQ-E, ARQ-E3, ARQ-S, SWED-ARQ, POL-ARQ and Piccolo used by diplomatic, military and aeronautical concerns worldwide. The M-8000 has calibrated variable Baudot speeds with calibrated variable shifts. The new GMDSS or Global Marine Distress and Safety System mode has recently been added. The M-8000 has five user programmable sel-cals. Program in one, two or three words (or codes) which will automatically activate your printer when they are received. Think of the potential for this feature! The M-8000 can be completely controlled by a terminal or computer permitting full automation. The M-8000 itself is automated, utilizing a microprocessor to control shift tune and selection. Press a key and the M-8000 tunes the mark, finds the space, and displays the approximate shift. The M-8000 offers a user selectable initialization format and ten multi-function memories to store your most frequently used operating parameters. Manual tuning is facilitated by on-screen bargraph tuning indicators for level, mark and space plus a simulated tuning scope. Other features include: printer & video squelch, High-Low Tone select, 60, 85 and 1200 Hz shifts, six ASCII shifts, parity select and three position AGC. Instructive LEDs for: Mark, Space, Buffer, CW Lock, Squelch, Idle, Sync., Sel-Cal, Data, Tuning Error and Data Error (helpful in determining correct speed, protocol and sync.). Other refinements you have come to expect include: ATC, UOS, built-in diagnostics, Bit Inversion (Baudot), speed readout, external scope output plus serial and parallel printer ports. 16.4"W x 3.5"H x 12.5"D. Gray metal cabinet. Can be mounted in standard 19 inch rack with optional mounting kit *#0292* (see page 41). 9 Lbs. (15 Lbs. ship). 115/230 VAC, 50/60 Hz. Manufactured in the U.S.A. by Digital Electronic Systems. The M-8000 requires a VGA analog color video monitor (640 x 480 or better). Complete owner's manual with schematic.

- Standard Baudot Shifts - 170/425/850
- Extended Baudot Shifts - 60/85/1200
- ASCII Shifts - 85/170/425/850/1200
- Diversity Reception
- ARQ Surveillance - Multi-channel.
- Speed Readout: Indicates the incoming RTTY transmission rate.
- Auto Baud: Automatic Baud rate selection
- Auto Shift: Automatic Shift Selection
- Auto Tune: Automatic Baud, Shift, Sense
- Beep At: 1-Keypress 2-SelCal 3-Bel char.
- OPI Over Print Inhibit feature.
- Direct Entry of Baud and Shift
- Sel-Cals: 5 programmable sel-cals for automatic printer start-stop on receipt of keywords
- External Scope Output
- On-Screen Simulated Tuning Scope
- Screen Print and Screen Saver
- Spectral Display
- User adjustable filtering control
- VGA Color display (user selectable colors)
- Support for laser printer (*HPII* compatible)
- High Res. FAX with false color feature.
- MSI Multiple Scroll Inhibit: Eliminates blank space on screen and/or printer.
- ATC Automatic Threshold Control for improved copy during fading.
- AGC Automatic Gain Control
- UOS Unshift On Space auto shift to letters case after blank received.
- Self Test: Built-in diagnostics
- Squelch selectable for screen and/or printer.
- Input Gain Control
- Status Line with five on-screen tuning bars.
- Four Alphabets: ITA2, MIL, TELEX, Cyrillic
- Remote Terminal Operation
- Real-Time Clock/Calendar
- POCSAG and Golay Pager modes.

LIMITED WARRANTY

Standard Manufacturer Warranty: 1 Year

Optional Extended Warranty To: 3 Years
Order #2718 ..... $39.00

PRICING

M-8000v7 List Price $1599.00
M-8000v7 Discount Price
Order #0087 ..... **$1399.00**
Shipping/Handling/Insurance $12.00

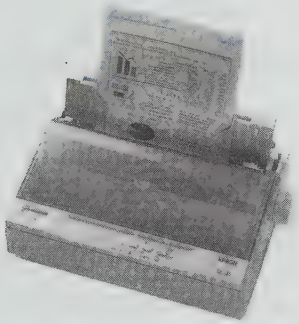
RECEPTION MODES

- **Morse Code** with auto speed ranging. 5 to 120 W.P.M.
- **RTTY Baudot** - Standard Speeds: 45, 50, 57, 75 and 100 baud.
- **RTTY Baudot** - Non-Standard Speeds: 20 to 250 baud.
- **RTTY Baudot** - Bit Inverted. Manual or automatic sequencing.
- **RTTY ASCII** 75, 110, 150, 300, 600, 1050, 1200, 1800 baud.
- **Sitor A** - (ARQTOR, Amtor A)
- **Sitor B** - (FECTOR, Amtor B) Collective and Selective
- **VFT (Frequency Division Multiplex)** 8, 12, 16 or 24 channel
- **Piccolo** Multi-tone teleprinter code.
- **ARQ-M2 (TDM)** Two Channel 86, 96 and 100 baud.
- **ARQ-M4 (TDM)** Four Channel 172, 192 and 200 baud.
- **ARQ-E** 48, 64, 72, 86, 96, 144 and 192 baud.
- **ARQ-E3** 48, 64, 72, 86, 96, 100, 192 and 200 baud.
- **ARQ-S** 4, 5, 6 or 7 character groups.
- **ARQ6-90** 200 baud
- **SWED-ARQ** 3, 9 or 22 character groups.
- **FEC-A** 96, 144 and 192 baud.
- **FEC-S** 96, 100, 144, 192 and 200 baud.
- **POL-ARQ** 100 baud.
- **Packet** 300 and 1200 baud (AX.25 Protocol)
- **PACTOR** 100 and 200 baud
- **GMDSS** 100 baud.
- **ACARS** VHF aviation mode.
- **POCSAG and Golay** Pager modes.
- **Facsimile (FAX)** - AM & FM 60, 90, 120 and 240 LPM.
- **Russian Third Shift Cyrillic** Cyrillic Characters Displayed to Video.
- **Literal Mode** This feature uses special symbols to represent normally non-printing characters. (To Video Port only)
- **Databit Mode** This feature converts the incoming data stream into zeros and ones.

Explanation of recently added features:
GMDSS or Global Marine Distress and Safety System is digital mode used in ship-to-ship and ship-to-shore communications. It is used to signal ship emergencies relaying position and other telemetry data.
POL-ARQ is an HF European diplomatic mode. The Sel-Cal and Remote Command set features have also been enhanced.

EPSON

LX-300



The Epson LX-300 is a low cost full-featured nine pin dot matrix printer. It uses standard tractor or friction feed paper to 9" wide. It works very well with the M-400, M-900 and M-8000. Now you can "hardcopy" those interesting RTTY-CW receptions. Also prints excellent shortwave FAX pictures. Uses standard parallel interface and is IBM compatible so you can use it with most computers too. Advanced features include: auto-switching serial *and* parallel interfaces, bidirectional printing and four type styles. Continuous paper can be fed by the supplied push-tractor or single sheets can be friction fed. This is a very quiet printer. 264 CPS draft or 53 CPS NLQ mode. 120 VAC 30W 60 Hz only. 14.4"W x 5.2"H x 10.8"D. One year manufacturer's limited warranty. UL listed.

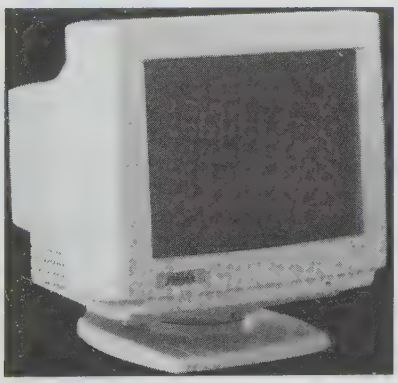
LX-300 *Order #2665* **$219.95** (+$9)

Extra ribbon for Epson LX-300. Black.

Ribbon *Order #2374* **$7.95** (+$3)

AOC

SPECTRUM 4VLR

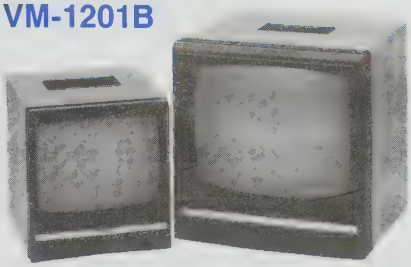


The **AOC Spectrum 4VLR** is an ideal monitor for the M-8000. This 14" VGA analog color monitor provides .28 mm dot pitch and up to 1024 x 768 resolution (including 640 x 480) with unlimited colors. Convenient front controls for: Power, H. Center, V. Size, Brightness and Contrast. Complete with tilt swivel base and DB-15 video cable; ready to plug into the Universal M-8000. Size: 10"W x 14.8"D x 14" H. (Reminder: the M-8000 will not work with composite or EGA monitors).

4VLR *Order #0778* **$299.95** (+$11)

PROVIDEO

VM-901B
VM-1201B



The ProVideo VM-901B monitor is just right for those requiring a high-quality, small metal cased composite monitor. This 9 inch diagonal video monitor provides > 800 lines resolution. Front controls include: Power, Contrast, Brightness, Horizontal Hold and Vertical Hold. Rear composite input .5-2V p-p sync. neg. with BNC jack. Input impedance is High or 75 Ohm switchable. Black metal case 8.6"W x 9.5"H x 10"D 13 Lbs. 120 VAC 60 Hz. (Not for use with M-8000).

VM-901B *Order #3309* **$159.95** (+$8)

The ProVideo VM-1201B is the same as the VM-901B, but it has a 12 inch rather than a 9 inch tube (measured diagonally). Resolution > 800 lines. Metal case: 12"W x 11.5"H x 12.5"D 20 Lbs. 120 VAC 60 Hz 32W. (Not for use with M-8000).

VM-1201B *Order #3310* **$199.95** (+$10)

Klingenfuss Publications

◆ Noted author Joerg Klingenfuss has produced a 2½ hour **audio CD set** of 71 H.F. emission types. Please see page 84 of this catalog for full details.

HOOKUP CABLES

■ **Audio Cable RCA Phono to ¼" 2 Conductor**
Connects M-800, M-6000, M-7000 or M-8000 to receivers with RCA phono output such as NRD-515/525/535D and the R-8. Six foot shielded.
Order #1112 **$2.99** (+$2)

■ **Audio Cable Mini to ¼" 2 Conductor Plug**
Connects M-800, M-6000, M-7000 or M-8000 to receivers with mini plug output such as R-2000/5000, R-71A and FRG-8800. Six foot shielded.
Order #1553 **$2.99** (+$2)

■ **Video Cable BNC to RCA**
Connects M-900 or M-7000 to monitors with BNC input such as ProVideo or Koyo. Three foot RG-59 shielded.
Order #2543 **$5.99** (+$3)

■ **Audio Cable Mini to RCA Phono Plug**
Connects M-1000/1200 to most portables. Shielded six foot.
Order #1408 **$2.99** (+$2)

■ **Parallel Printer Cable**
Connects M-400/M-900/M-6000/M-7000/M-8000 to your parallel printer. Six ft. RFI shielded.
Order #2437 **$14.95** (+$3)

INFO-TECH ELECTRONIC EQUIPMENT

ROM UPGRADES

Universal products are designed for future expansion. Whenever possible, Info-Tech offers an upgrade to bring prior models up to date. When ordering upgrades you must indicate: the **serial number** (stamped on back of item), the complete **version number** (appears on the video monitor at power up), and whether your unit has any **options** (such as video FAX, clock etc.). Most upgrades require simple plug-in installation. ROMs must be custom made, allow 6 weeks for delivery.

■ **Info-Tech M-6000 Version 2 ROM Upgrade**
For M-6000v1 owners. Will add: •Packet Mode 300/1200 baud, •Autor, •Ten User Memories, •Status Line Dump. With new manual.
Order #2317 **$69.95** (+$3)

■ **Info-Tech M-6000 Version 6 ROM Upgrade**
For M-6000v5 owners. Will add: •Literal Mode, •Databit Mode, •Russian Cyrillic •ARQ-E •ARQ-E3 and •OPI. With new manual. (2 ICs).
Order #2378 **$69.95** (+$3)

■ **Info-Tech M-6000 Version 9 ROM Upgrade**
For M-6000v8 owners. Will add: •ARQ-E •ARQ-E3 and OPI. With new manual.
Order #2971 **$69.95** (+$3)

■ **Info-Tech M-7000 Version 3 ROM Upgrade**
For M-7000v1 & 2 owners. Will add: •ARQ-E/E3 •ARQ-S •FEC-S •FEC-A and •SWED-ARQ.
Order #1003 **$69.95** (+$3)

■ **Info-Tech M-7000 Version 6 ROM Upgrade**
For M-7000v5 owners. Will add: •ARQ-S •FEC-S •FEC-A and •SWED-ARQ.
Order #0343 **$69.95** (+$3)

■ **Info-Tech M-450 Version 3 ROM Upgrade**
For M-450v2 owners. Will add: •POCSAG 2400
Order #3509 **$39.95** (+$3)

■ **Info-Tech M-8000 Version 2 ROM Upgrade**
For M-8000v1 owners. Will add: •PACTOR, ARQ6-90 and ACARS. ACARS (only) requires the installation of two resistors.
Order #2613 **$69.95** (+$3)

■ **Info-Tech M-8000 Version 7 ROM Upgrade**
For M-8000v5 owners. Will add: •GMDSS and POL-ARQ.
Order #1102 **$69.95** (+$4)

RACK MOUNTING KITS

■ **Info-Tech Rack Mounting Ears - Large**
Two gray "L" brackets for mounting the M-600, M-6000, M-7000 or M-8000 into a standard 19" rack. User must supply mounting screws.
Order #0292 **$22.95** (+$4)

■ **Info-Tech Rack Mounting Ears - Small**
Two black "L" brackets for mounting the M-605 or M-610 into a standard 19" rack. User must supply mounting screws.
Order #1657 **$19.95** (+$3)

Model Comparison Chart

	M-8000v7	M-8000v5/2	M-8000v1	M-900	M-450 READER	M-400 READER	M-1200 CARD	M-1000 CARD	M-7000v7	M-7000v5	M-7000v1	M-6000v8	M-6000v2/5	M-6000v1	M-600A	M-200F
RECEPTION MODES																
Morse Code (CW)	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RTTY Baudot Standard Speeds 45, 50, 57, 75, 100 Baud	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RTTY Baudot Variable Speeds 37-251 Baud	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
RTTY Bit-Inverted	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓	
RTTY ASCII 75, 110, 150 Baud (110 only M200/600)	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
RTTY ASCII 300, 600, 1200 Baud	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	
RTTY ASCII Non-Standard 1050, 1800 Baud	✓	✓	✓					✓	✓	✓	✓	✓	✓			
SITOR A & Sitor B (aka AMTOR, ARQ, FEC, NAVTEX)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Autor (Automatic Selection & Sync. to Sitor A or Sitor B)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
ARQ M2 (TDM) 2 channel 86, 96, 100 Baud	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
ARQ M4 (TDM) 4 channel 172, 192, 200 Baud	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
ARQ-E 48, 64, 72, 86, 96, 144, 192 Baud	✓	✓	✓				✓	✓	✓	✓						
ARQ-E3 48, 64, 72, 86, 96, 100, 192, 200 Baud	✓	✓	✓				✓	✓	✓	✓						
ARQ-S 4, 5, 6 or 7 character groups	✓	✓	✓						✓							
ARQ-6-90 200 Baud	✓	✓					✓									
FEC-A 96, 144, 192 Baud	✓	✓	✓	✢	◆	◆	✓		✓							
FEC-S 96, 100,144, 192, 200 Baud	✓	✓	✓						✓							
SWED-ARQ 3, 9, 22 character groups	✓	✓	✓		✓	✓			✓							
Packet 300 and 1200 baud (AX.25)	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓			
Pactor	✓	✓														
Piccolo	✓	✓	✓													
POCSAG & Golay Pager Modes	✓	✓	✓		✓	✓	✓									
ACARS	✓	✓			✓	✓	✓									
CTCSS, DCS					✓	✓	✓									
DTMF					✓	✓										
FAX AM/FM 60, 90, 120, 240 LPM 288, 440, 576 I.O.C.	✓	✓	✓	✙	❄	❄	✓	✓	✓	✓	✓					
VFT (FDM) HF: 8, 12, 16, 24 Channel	✓	✓	✓						✓	✓	✓					
VFT (FDM) Satellite: 50 Channel									✓							
POL-ARQ	✓															
GMDSS	✓															
RECEPTION SHIFTS																
Standard Baudot Shifts 170, 425, 850 Hz plus variable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extended Baudot Shifts 85, 1200 (& 60 Hz on M-8000)	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
Microprocessor Controlled Shifts	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
Automatic Shift Selection & Shift Display	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
Automatic Shift and Baud	✓	✓	✓				✓	✓	✓	✓	✓					
Standard ASCII High Speed Shift (BEL)	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	
Expanded ASCII Shifts (103, 202, v21, v23)	✓	✓	✓				✳	✳	✓	✓	✓	✓	✓	✓		
Selectable Low and High Tone Pairs	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
PRINTER CONTROL																
Serial RS-232, MIL-188	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓	✓	✓
Parallel (Centronics) Printer Port	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✧	
Screen Print (Retro Print)	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	
User Programmable Sel-Cals (Text String Search)	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
ADDITIONAL FEATURES																
Microprocessor Controlled Switch Capacitor Filters	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
Unshift-On-Space & MSI (no MSI on M-400)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Status Line	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Speed Readout to Nearest Standard Rate	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
User Programmable Initialization Format	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Ten User Programmable Memories	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓			
Remote Terminal/Computer Control Port	✓	✓	✓		✓				✓	✓	✓	✓	✓	✓		
Status Line Dump To Printer	✓	✓	✓				✪	✪	✓	✓	✓	✓	✓			
Spectral Display & Simulated "CRT" Tuning Scope	✓	✓	✓													

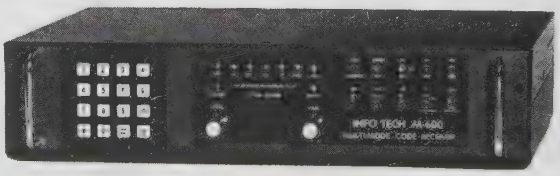
Model Comparison Chart

ADDITIONAL FEATURES (continued)	M-8000v7	M-8000v5/2	M-8000v1	M-900	M-450 READER	M-400 READER	M-1200 CARD	M-1000 CARD	M-7000v7	M-7000v5	M-7000v1	M-6000v8	M-6000v2/5	M-6000v1	M-600A	M-200F
Automatic Gain Control (AGC)	✓	✓	✓						✓	✓	✓	✓	✓	✓		
Automatic Threshold Control (ATC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
On Screen Bar-Graph Tuning Indication	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
Scope Output	✓	✓	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓
ARQ-Moore (TDM) All-Channel Surveillance Mode	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓			
ARQ-Moore (TDM) Split Screen Mode									✓	✓	✓					
Three User Selectable TTY Alphabets (ITA2, MIL, TEL)	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
Russian Third Shift Cyrillic Alphabet (Screen Only)	✓	✓	✓						✓	✓	✓	✓	✘			
Literal Display Mode of Unprinted Characters to Screen	✓	✓	✓				✓	✓	✓	✓	✓	✓				
Databit Code Analysis (Async. and Snyc. modes)	✓	✓	✓				✓	✓	✓	✓	✓	✓				
Video Squelch and Printer Squelch	✓	✓	✓				✓	✓	✓	✓	✓	✓				
Aural Beep Programmable: 1-Key 2-SelCal 3-Bell Char.	✓	✓	✓						✓	✓	✓	✓				
110/220 VAC 50/60 Hz Selectable	✓	✓	✓						✓	✓	✓	✓	✓	✓		✓
Tuning Error Indicator	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
Data and Data Error Indicator	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
Idle Indicator	✓	✓	✓				✓	✓	✓	✓	✓					
Squelch Indicator	✓	✓	✓	✓			✓	✓	✓	✓	✓					
Diversity Reception	✓	✓	✓						✓	✓	✓					
Parity Select On ASCII Receive (ODD, EVEN, none)	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓		
Built-In Diagnostics	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	
Video Scrolling									✓	✓	✓					
I.O.C. Lock	✓	✓	✓						✓	✓	✓					
Audio Input Gain Control	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓
Save Text & FAX Images to Disk							✓	✓								
Help Screen or Line							✓	✓	✓	✓	✓					
Screen Saver	✓	✓	✓						✓	✓	✓					
Real Time 24 Hr Clock & Time Date-Stamp to Printers	✓	✓	✓				✪	✪	✓	✧	✧					
FAX Displayed to Video (Hi-Res. on M-1000/1200/8000)	✓	✓	✓	✧			✓	✓	✓	✧	✧					
Video FAX 'zoom' and 'false-color' features	✕	✕	✕				✓	✓								
Rack Mounting Brackets for Standard 19" Rack	✧	✧	✧						✧	✧	✧	✧	✧	✧	✧	

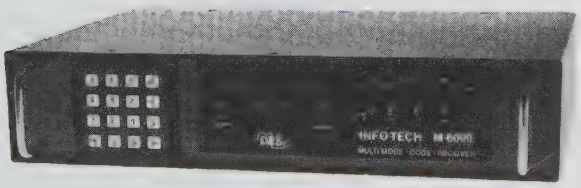
✧ Optional ◆ In M-400: 96 and 144 baud only. ✙ In M-900: no AM, 90 LPM or 440 IOC. ❄ In M-400: 120 LPM / 576 IOC FM only. ✛In M-900v2 ✘ In M-6000v6 ✳103 & 202 ✪Available via screen dump. ✕ No zoom on M8000. **Notes:** The **M-450, M-900, M-1200** and **M-8000v7** are current models. M-200F, M-600A, M-6000 and M-7000's are usually available from the *Used Dept.* of Universal. Models M-400, M-450, M-900, M-1000, M-1200, M-7000 and M-8000 are *Universal* brand, all others are *Info-Tech* brand. All models manufactured by Digital Electronic Systems in the U.S.A. Prices and specifications are subject to change without notice. v: 02/97

The following models are usually available from Universal Radio's Used Equipment Department:

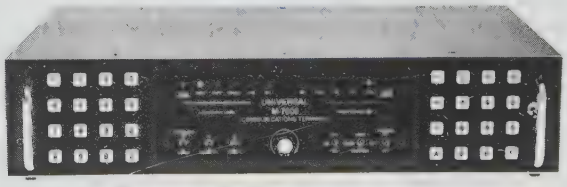
Info-Tech M-200F



Info-Tech M-600

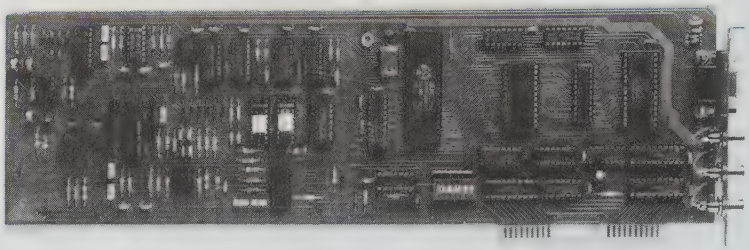


Info-Tech M-6000



Universal M-7000

UNIVERSAL M-1200



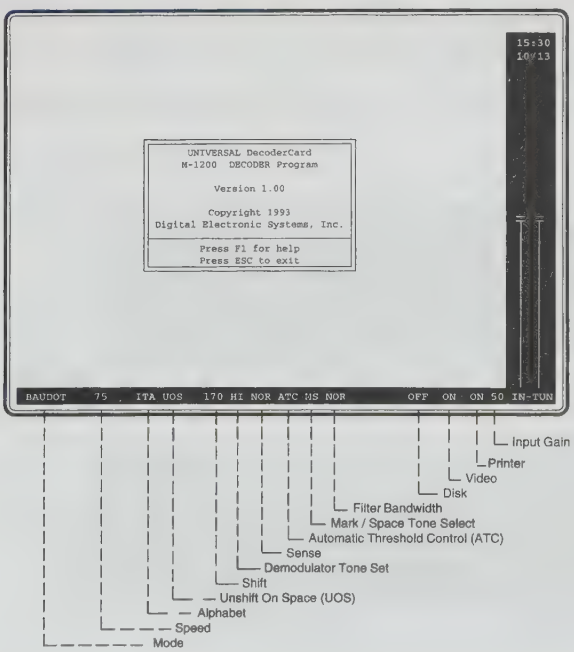
RECEPTION MODES

- **Morse Code** with auto speed ranging.
  5 to 90 W.P.M.
- **RTTY Baudot** - Standard Speeds:
  45, 50, and 74 baud.
  Non-standard speeds: 45 to 250 baud.
- **SITOR A& B** (NAVTEX, AMTOR)
- **ARQ-M2 (TDM)**
  Two Channel 86, 96, 100 baud.
- **ARQ-M4 (TDM)**
  Four Channel 172, 192, 200 baud.
- **ARQ-E**
  48, 64, 72, 86, 96, 144 and 192 baud.
- **ARQ-E3**
  48, 64, 72, 86, 96, 100, 192 and 200 baud.
- **ARQ-6-90**
  200 baud.
- **FEC-A**
  96, 144 and 192 baud.
- **ASCII**
  110, 150, 300, 600 and 1200 baud.
- **Packet Radio**
  300 and 1200 baud (AX.25 protocol)
- **Facsimile (FAX) -** AM & FM
  60, 90, 120 and 240 LPM. (288/440/576)
- **POCSAG & GOLAY**
  Digital pager modes.
- **ACARS**
  VHF Aviation teletype mode.
- **CTCSS (PL)**
  41 standard frequencies
- **DCS (DPL)**
  104 standard codes

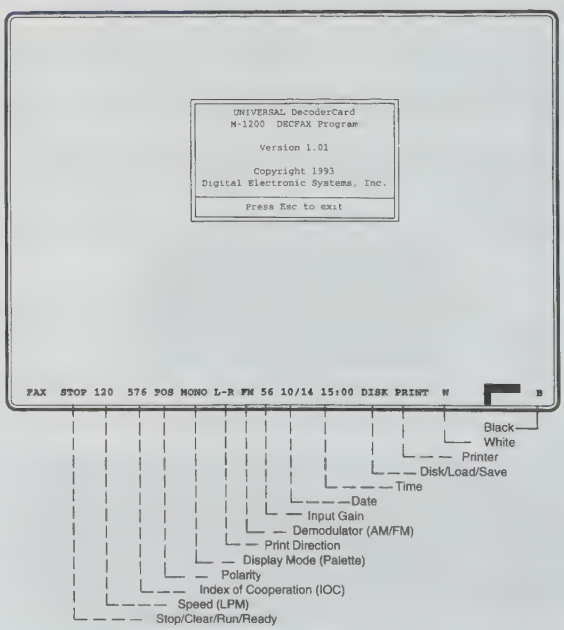
Turn your IBM computer (or fully compatible clone) into a powerful intercept device! The Universal M-1200 Decoder Card requires just one full-size slot in your PC. Your computer can open up a new world of listening (... or *seeing*) opportunities! Now you can decode standard and sophisticated modes, previously only available on expensive dedicated units. This board contains three separate demodulators (FAX, Morse and RTTY) to ensure legible reception even under adverse reception conditions. Variable shifts from 60 to 1200 Hz are possible as well as low or high tone pairs and modem tone sets. Standard reception modes are included such as Morse Code, Baudot RTTY and SITOR A&B. Advanced diplo.-military modes such as FEC-A, ARQ-M2, ARQ-E, ARQ-E3 and ARQ-6-90 are supported. ASCII and Packet modes are also featured. The VHF-UHF enthusiast has capability to monitor the ACARS aviation teletype mode, plus POCSAG (512 baud) and GOLAY pager modes. Decoding of CTCSS and DCS is also supported. Many user features are available to enhance your radioteletype listening. Multiple Scroll Inhibit (MSI) removes blank lines, Automatic Threshold Control (ATC) provides reception during mark-only or space-only reception. Over Print Inhibit (OPI) prevents overprinting on your printer. Sel-Cal capability allows your computer to print only on selected subjects received. Advanced RTTY enthusiasts will appreciate the *Databit* and *Literal* modes, helpful in protocol identification and decryption. For FAX reception (only) your computer must have either an EGA or VGA monitor (color or mono). The video quality of your FAX intercepts will amaze you. The detail and resolution on your monitor will rival that previously seen only on printed output. Advanced FAX imaging includes false-color and zoom features. FAX images as well as text traffic can be saved on to disk for later retrieval or analysis. Despite the sophistication of this device, operation is easy through on-screen menus, status indicators and help windows. User programmable memories are supported, and you can select your own screen colors. A *datascope* feature operates in both RTTY and FAX modes. Audio input for a single receiver is via a DB9F I/O jack or an RCA phono jack. Scope output is also available via the DB9F jack. Note: For accurate DCS, PL and pager reception, direct connection to the receiver's detector may be required. The M-1200 comes with an informative manual and 3½" 720K diskette. One year limited warranty. Made in the U.S.A.

Universal M-1200 List $449.95 *Order #1200* **$399.95** (+$5)

SCREEN FOR RTTY-CW



SCREEN FOR FAX



Please see ACARS-only decoder on page 39.

Kantronics

KPC-3 PLUS

The KPC-3+ is a small full-featured packet TNC. It comes standard with 32K Ram expandable to 512K. Like all Kantronics TNC's, the KPC-3 comes with PBBS, KA-Node, Host Mode, Kiss and WEFAX capabilities. The new "Plus" version features: 2 A/D inputs, 2 digital output control lines, digital pots so audio drive can be set from the PC, APRS commands & a 250 page manual.

Kantronics KPC-3+ TNC 32K
List $139.95 *Order #1654* ..... **$124.95** (+$6)

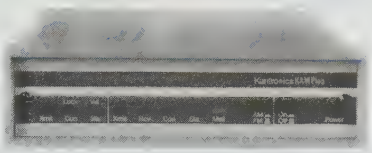
Kantronics KPC-3+ TNC 128K
List $159.95 *Order #1908* ..... **$144.95** (+$6)

SUPER FAX II

WEFAX reception program for KAM or KPC series using ver. 2.8 or later firmware. Requires HF radio.

Kantronics SuperFax II *IBM-PC*
List $49.95 *Order #0144* ..... **$47.95** (+$4)

KAM PLUS

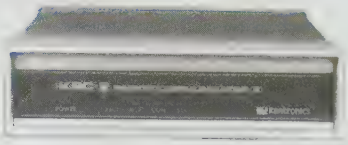


The Kantronics KAM Plus all-mode computer interface has RTTY, ASCII, AMTOR, Packet, Pactor, CW and FAX capability. Two radio ports are supplied for simultaneous HF and VHF packet. A unique MYGATE callsign allows packets received on one port to be digipeated on to the other port. Designed primarily for the amateur radio market, considerable technical knowledge is required to connect and operate this device. Includes: manual, RS-232 cable, radio cable (minus mic plug) and Pacterm terminal prgm. Requires 12 VDC 300 ma.

Kantronics KAM PLUS Multi-Mode
List $339.95 *Order #2535* ..... **$319.95** (+$6)

Kantronics Hostmaster II+ Program. *IBM-PC*
List $84.95 *Order #2861* ..... **$84.95** (+$3)^
^Free shipping with interface.

KPC-2



This proven high-performance Packet Communicator features Kiss mode for TCP/IP, a personal packet bulletin board (PBBS) and the ability to be a KA-NODE. WEFAX reception is also possible with the proper software.

Kantronics KPC-2 TNC
List $179.95 *Order #0754* ..... **$149.95** (+$5)

KPC-9612 PLUS

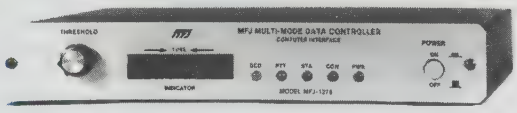
The KPC-9612 is similar to the KPC-3 in looks and features but has dual-speeds and dual ports. With a 9600 baud capable radio, the 9612 can monitor 9600 and 1200 baud packets at the same time. With two radios, it can provide simultaneous 9600 and 1200 baud operation and mailbox access.

Kantronics KPC-9612+ Dual Port TNC 32K
List $289.95 *Order #3516* ..... **$259.95** (+$6)

Kantronics KPC-9612+ Dual Port TNC 128K
List $309.95 *Order #3517* ..... **$279.95** (+$6)

MFJ

MFJ-1278B
MFJ-1278BT
MFJ-1278B/DSP



The MFJ-1278B ten mode computer interface has RTTY, PACTOR, Packet 300/1200, Amtor, SSTV, Navtex, CW and FAX capability. You must supply the computer, a terminal program and appropriate wiring. A power supply is provided. This device is designed primarily for the amateur radio market. Considerable technical knowledge is required to connect and operate this device. The MFJ-1278TB (Turbo) is identical but also features built-in 2400 baud Packet capability. MFJ offers optimized terminal programs for IBM users called the MFJ-1284 and MFJ-1289. They come on a 5¼" diskette.

MFJ-1278B Multi-Mode Controller
List $299.95 *Order #0109* ..... **$269.95** (+$6)

MFJ-1278BT Multi-Mode Controller 2400
List $369.95 *Order #0503* ..... **$339.95** (+$6)

MFJ-1278B/DSP Multi-Mode Controller +DSP
List $379.95 *Order #2858* ..... **$349.95** (+$6)

MFJ-1284 Starter Kit Terminal Pgm. - IBM-PC
List $24.95 *Order #2606* ..... **$22.95** (+$3)^

MFJ-1289 MultiCom Software. - IBM-PC
List $59.95 *Order #2144* ..... **$54.95** (+$3)^
^Free shipping with MFJ-1278

MFJ-1270C

The MFJ-1270C provides packet radio communications at an affordable price. Features such as *Kiss*, easy mail and WeFax reception make this Tapr clone a good choice for getting started.

MFJ-1270C Tapr Clone
List $119.95 *Order #1135* ..... **$114.95** (+$4)

MFJ-52

The MFJ-52 FM deviation meter plugs into your TNC configured as The Net X-1J Node and users can check their tranceiver FM packet deviation.

MFJ-52 FM Deviation Meter
List $29.95 *Order #1402* ..... **$27.95** (+$4)

MFJ-1276

The MFJ-1276 has all the features of the MFJ-1270C HF/VHF/TNC plus PACTOR, a precision tuning indicator and an extra 32K mailbox memory. PACTOR is a new HF mode that combines the best of Packet and AMTOR plus more. It provides faster throughput than either Packet or AMTOR and excellent weak signal operation. Includes 20 LED bargraph HF tuning indicator.

MFJ-1276 Packet TNC
List $139.95 *Order #1469* ..... **$134.95** (+$5)

DISCOVER NOVUS VISA MasterCard

PKT

PC STATION

Now you can get into Packet radio quickly! Simply plug in the PKT PC card, add an antenna and you're on the air! The American made PKT *PC Station* is ready to go when you receive it. This is a *complete* Packet station that fits into a standard PC half card slot. It inserts into most IBM compatible laptop computers that accept a half slot card for a *truly* portable packet station. The PKT *PC Station* contains a quality two channel, 5 watt transceiver by Motorola and 1200 Baycom style modem. The system comes complete with TNC software and manual. Supplied with 145.01 MHz and a second channel of your choice. Channels may be switch or keyboard selected. BNC connector for RF out.

PKT PC Station
List $399.00 *Order #3140* ..... **$279.95** (+$7)

TNC-XCVR CABLES

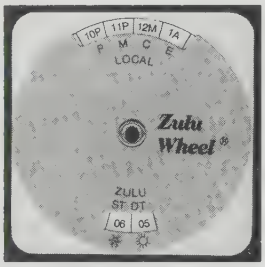
Universal offers custom TNC to radio cables to allow you to instantly connect your TNC to your mobile or base transceiver. Just tells us: (1.) Which **rig** you have (2.) Which **TNC** you have. We will construct a quality shielded 3 foot cable with the proper connectors at each end. For longer cables add $1 per foot. Allow 1 week for assembly.

Order #0251 ..... **$29.95** (+$3)
As above except for your HT.
Order #0451 ..... **$29.95** (+$3)
Multi-mode cables.
Order #1374 ..... **$49.95** (+$3)

COFFEE MUG

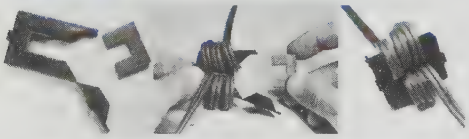
This blue English ironstone mug features the Universal Shortwave globe logo and lettering in white and red. Holds 10 ounces.
Universal Mug *Order #0417* **$5.95** (+$2)

ZULU WHEEL



The *Zulu Wheel* instantly converts "Zulu" time (also called UTC or GMT) to local time. It is designed to work in all four U.S. time zones. It automatically compensates for standard or daylight time. Pocket sized to go anywhere. A great idea for pilots, shortwave listeners and hams.
Order #2008 **$5.95** (+$2)

MFJ-701



The MFJ-701 *Snap-On-Choke* kit allows you to easily eliminate or minimize radio frequency interference (RFI). Just wind your AC cord through the choke. Package of four.
MFJ-701 *Order #1778* **$14.95** (+$2)

MISCELLANEOUS CABLES

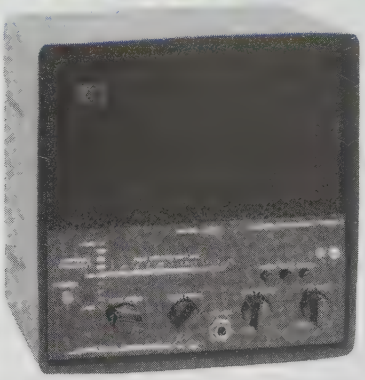
- **Audio 6 Foot RCA Phono to ¼" 2 Conductor**
  Order #1112 **$2.99** (+$2)
- **Audio 6 Foot Mini Plug to ¼" 2 Conductor**
  Order #1553 **$2.99** (+$2)
- **Audio 6 Foot Mini Plug to RCA Phono Plug**
  Order #1408 **$2.99** (+$2)
- **Audio 6 Foot Mini Plug to Mini Plug**
  Order #1411 **$2.49** (+$2)
- **Audio 10 Foot RCA Plug to RCA Plug**
  Order #0668 **$2.99** (+$2)
- **Audio 6 Foot Mini Plug to Mini with Atten.**
  Order #3374 **$3.69** (+$2)
- **Video 6 Ft. RCA Phono to RCA Phono RG59**
  Order #2766 **$2.99** (+$2)

◆ Free shipping on misc. cables on orders over $20.

CASE

This padded canvas carrying case is just right for transporting and protecting your larger portable radio (ICF-2010/SW55/SW77, ATS-818, Satellit 500/700, etc.). With shoulder strap and zippered side pocket. Approximate size is 12" x 8" x 4". Black with Universal Radio globe logo.
Universal Case *Order #0395* **$29.95** (+$4)

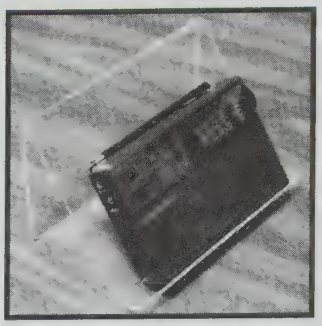
ALPHA DELTA VRC



Alpha Delta has introduced an exciting new innovation for every radio listener called the **Alpha Delta Variable Response Console.** This advanced audio processing speaker system will enhance the reception capability of any receiver, transceiver or scanner. The ducted port bass reflex speaker is designed as an integral part of the system. A low distortion, low harmonic, push-pull audio amplifier outperforms the single-ended type and provides clean, crisp audio. A continuously adjustable 12 dB bass boost/cut circuit enhances bass response for high-fidelity music and reduces low frequency rumble for sharper voice clarity. The continuously adjustable sharp cutoff Sampled Data Switch Capacitor Audio Filter can be set for optimum interference reduction for AM, CW, SSB or DATA. The calibrated LED light bar shows the cutoff frequency. The Peaking circuit allows CW/DATA signals to pop-out of the noise. A fully adjustable 40 dB deep Notch circuit removes interfering heterodynes. A special circuit allows the Peak and Notch to exactly track each other. Output jacks for recorders and headphones are provided. Supplied with 12V wall transformer.
VRC *Order #2450* **$229.95** (+$8)

The VRC-2 is the enclosure and speaker only. The VRC-2 makes a great external speaker for any communications receiver or amateur transceiver.
VRC2 *Order #2282* **$99.95** (+$6)

RADIO STAND

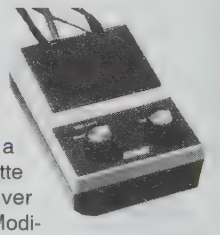


This handy clear plastic stand supports your portable shortwave at the optimum viewing angle. Size: 6.75"W x 4.5"H x 4.75"D (5.2" on slant).
Universal Stand *Order #0022* **$8.95** (+$2)

MFJ-306

The MFJ-306 mobile world band explorer lets you visit the world while you drive. It will convert your car radio into a shortwave radio at the push of a button. You will be able to monitor the 19, 25, 31 and 49 meter bands. It is easy to install. Just unplug your car radio antenna, and plug it into the MFJ-306. Then insert the MFJ-306 cable into your car radio antenna jack and connect 12 VDC. The MFJ-306 works with all car radios including digital ones. Please note the *actual* world band frequencies will not be displayed. Just 5" x 1.5" x 3.5".
MFJ-306 *Order #1328* **$74.95** (+$4)

NITELOGGER



The Nitelogger provides a means to activate a cassette recorder from any receiver with a squelched audio. Modification of the radio is not necessary. The Nitelogger works with any tape recorder equipped with an external microphone and remote control capabilities. Visual indication of proper audio level is supplied as is delay time and monitor volume, which can be controlled from the front panel. With AC powers supply.
Nitelogger *Order #1279* **$49.95** (+$4)
Nitelogger II *Order #1595* **$64.95** (+$4)

Batteries

We stock fresh, top quality alkaline batteries made by Duracell. There is no additional charge for shipping if ordered at time of receiver purchase.
Duracell Alkaline AA Cells (Pkg. of 4)
Order #2043 **$3.99** (+$2)
Duracell Alkaline D Cells (Pkg. of 4)
Order #1786 **$4.99** (+$2)

Cobra®

2010GTLWX

The Cobra 2010GTLWX may just be the ultimate base station transceiver. The five digit digital frequency counter measures both AM and SSB operations. Two multi-function analog meters monitor power, SWR, modulation and signal strength. Also includes ANL, NB, RF gain, clock, voice lock, and cophase controls. Includes new dynamic base station mic.

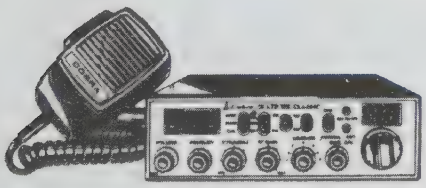
Order #1825 **$399.95** (+$9)

148FGTL

The Cobra 148FGTL Professional Series 40 channel SSB CB transceiver features a digital channel display *and* a full digital frequency readout. Other refinements include: ANL, NB, Hi/Low Dimmer Switch, PA, Tone Hi/Low, Squelch and RF gain plus Dynamike and voice lock controls.

Order #1491 **$239.95** (+$8)

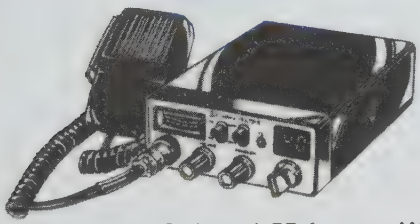
29LTDWX



The Cobra 29LTDWX Classic has 7 built in weather channels, NB, ANL, illuminated S/RF/SWR/MOD meter. Also includes RF gain, and LEDs for RX, TX, WX and antenna warning.

Order #0904 **$139.95** (+$8)

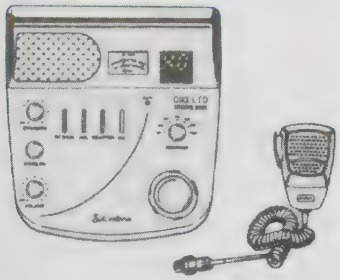
19LTDII



This clasic style 40 channel CB features ANL, digital channel readout, illuminated S/RF meter and instant channel 9.

Order #3068 **$54.95** (+$7)

93LTDWX



Owning a Cobra base station can be affordable. This stylish unit boasts 40 CB channels plus 7 NOAA weather channels and weather network priority. The 93LTDWX features digital channel readout, RF Gain, RF/S-Meter, instant Channel 9 and ANL.

Order #0295 **$129.95** (+$8)

148GTL

No compromise SSB operation is yours with the Cobra 148GTL. Combat noise with the noise limiter and noise blanker. Other controls for CB/PA, Dim/Bright and Tone High/Low. With RF gain plus Dynamike and voice lock controls. Illuminated analog meter for S/RF/Cal/SWR.

Order #1304 **$179.95** (+$8)

25LTDWX

The Cobra 25 LTDWX Classic has digital channel display, analog meter, Dim/Bright, CB/PA plus Dynamike and RF Gain controls. Also has switches for Channel 9 and weather.

Order #0874 **$109.95** (+$8)

19DX

The Cobra 19DX contemporary styled 40 channel compact CB has an LED Signal Strength meter, TX LED and instant channel 9.

Order #2738 **$49.95** (+$7)

uniden

WASHINGTON

This respected single sideband base station from Uniden includes digital channel indicator, meter for RF, Signal strength and modulation. Instant channel 9, NB, ANL, headphone jack, RF Gain, and Mic Gain round out the features. 13.5"x11x5"

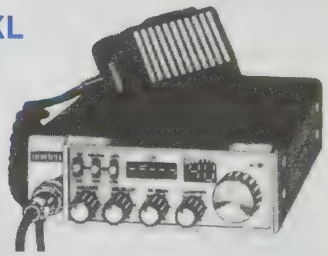
Order #3124 **$239.95** (+$8)

GRANT

The Uniden Grant mobile SSB 40 channel CB is full featured. Channel readout is by LED. Includes an integrated illuminated meter for SWR, Signal Strength, RF Output and modulation. With dimmer and clarifier controls.

Order #1188 **$159.95** (+$8)

PC122XL



High-performance single sideband is yours at a very affordable price. Also features an LED signal strength indicator. With RF gain, clarifier, NL and NB.

Order #3126 **$129.95** (+$7)

PC76XLW

The Uniden PC76XLW features ANL, NB, lit analog S/RF/SWR/Modulation meter and RF gain. Also with weather and instant channel 9.

Order #3125 **$129.95** (+$7)

GROVE SCAN BEAM

The Grove Scanner Beam works on a wide range of frequencies including: 30-50 MHz low-band VHF, 108-136 MHz aircraft band, 136-174 VHF high band, 225-400 MHz military aircraft and satellite band, 406-512 MHz UHF, and 806-960 MHz microwave mobile band. The Scanner Beam may be used with a TV antenna rotator or fixed in one position for a distant station while local stations still come in clear from all directions. Balun transformer, offset pipe and mounting hardware are included. No lead-in cable is provided. Approximately 8'H x 5' L. (Requires F-type connector on your coax).

SCAN BEAM *Order #0688* **$59.95** (+$11)

Installing base antennas can be dangerous! Request our **free** *Antenna Safety Advisory* pamphlet.

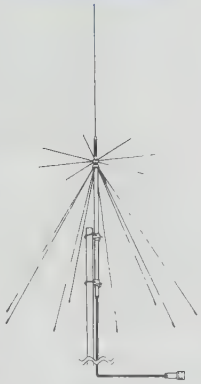
antennacraft SA-1-75KT

You can significantly improve the performance of your scanner with this affordable antenna system. This omni-directional, vertically polarized antenna utilizes three elements on a 20 inch boom. Frequency coverage: 27-54, 108-175 and 430-612 MHz. It even comes with 50 feet of RG-59 coax with an F connector (for the antenna) and a Motorola plug for the radio.

SA-1-75KT *Order #0640* **$29.95** (+$6)

ICOM AH-7000

The AH-7000 receives from 25 to 1300 MHz solid! It can also be used for transmit on 50, 144, 430, 900 and 1200 MHz ham bands. The discone construction offers the best performance possible in an omni-directional antenna. This antenna is 5½ ft. high and attaches to any standard mast (not supplied) with two supplied U-bolts. The AH-7000 comes with a preassembled 50 foot cable with an **N** connector at each end. Connects directly to the Icom R-100/7000/7100/8500.



Icom AH-7000 Antenna
Order #0828 ..... **$149.95** (+$8)

Universal 25 Foot N Extension Cable RG8x
Order #2542 ..... **$29.95** (+$4)

Universal 50 Foot N Extension Cable RG8x
Order #1633 ..... **$34.95** (+$5)

HUSTLER DCX

The Hustler DCX is a discone base antenna that provides good omni-directional coverage from 40 to 700 MHz. It is easily mounted to any mast (not supplied) with supplied hardware. Has SO-239 fitting to accept PL-259 plug. No lead-in cable is provided.

Hustler DCX *Order #1205* **$23.95** (+$5)

A-S MON R-51

The Antenna Specialist MON R-51 is a magnetic mount scanner antenna that covers 25-1000 MHz. This provides full scanner coverage in an easy-to-transfer system allowing you to move the antenna to another vehicle or remove antenna when it is not in use or when you do not wish to advertise the fact that you have a radio. The antenna is about 4 feet tall and comes with 12 foot of coax cable to a Motorola plug.

A-S MON R-51 *Order #1875* **$44.95** (+$6)

Valor WM SLBNC

Valor has developed a marvelous antenna accessory for everyone who uses a handheld scanner or HT in the car. The slim line kit mounts easily to any car window. Now mount your "duck" antenna outside the car window to maximize performance and range. With 7 ft. RG188 cable with BNC connector.

WMSLBNC *Order #2066* **$28.95** (+$3)

DIAMOND ANTENNA D-130J

The D-130J super discone antenna is an ultra-wideband omni-directional antenna that offers solid coverage from 25 to 1300 MHz. This lightweight antenna (2.2 lbs) is made of precision tooled stainless steel. It has an SO-239 jack to accept a PL-259. Cable and mast not supplied.

Diamond D-130J *Order #2405* **$89.95** (+$7)

NEVADA SE1300

This British made discone covers 25 - 1300 MHz. Uses N connectors. 5' 6". Cable not supplied.

SE1300 *Order #3362* **$89.95** (+$7)

A-S MON-52

The Antenna Specialist MON-52 is a trunk lid mounted scanner antenna that covers 25 to 1000 MHz. Provides enhanced 800 MHz reception. Includes coax cable with installed Motorola plug.

A-S MON-52 *Order #0401* **$49.95** (+$5)

MON-63

The MON-63 antenna coupler allows your scanner to share a standard AM/FM car antenna. Your auto antenna plugs into this coupler. The coupler then feeds your AM/FM auto radio *and* your scanner radio independently. Uses Motorola plugs.

A-S MON-63 *Order #0748* **$19.95** (+$3)

Valor TGS

This attractive black 23" through-the-glass mobile scanner antenna looks just like a cellular car antenna. It covers 30 - 1200 MHz and is complete with cable, connectors and all mounting hardware. Motorola plug.

Valor TGS *Order #0876* **$34.95** (+$4)

CREATE CLP5130-1 CLP5130-2

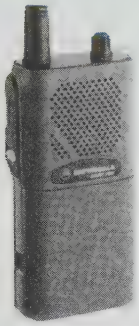
These high gain, directional VHF/UHF antennas can be used for receive or transmit (500 watts).

25 Elements covers 50 - 1300 MHz. 6' 8" boom.
CLP5130-1 *Order #3352* **$369.95** (+$13)

20 Elements covers 105 - 1300 MHz. 4' 7" boom.
CLP5130-2 *Order #3353* **$249.95** (+$12)

MOTOROLA

SPIRIT PRO SV21D



- VHF 2 Watt
- Single Channel
- Removable Belt Clip
- Transmit/Battery LED
- Rechargeable Battery
- Battery Charger
- Optional Coded Squelch
- Desk Charger Ready
- American Made

The entire *Spirit* series of Motorola handheld radios provide crisp, clear communications that fit in the palm in your hand. From its lightweight, high-impact polycarbonate/polyester blend housing to its environmentaly sealed electronic circuitry, the *Spirit* series is reliable and rugged. These units are fully tested through design and production to withstand years of real-world drops, kicks and splashes. The SV21D, VHF 2 watt model is ready to operate with supplied: flexible antenna, NiCad pack, ten hour wall charger, belt clip, operator's guide and FCC license application. Supplied with VHF Green ❍ 154.600 MHz channel unless specified otherwise. One year limited warranty.

List $239.00 *Order #1783* **$199.95** (+$5)

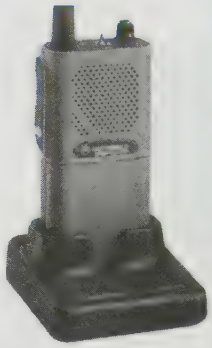
SPIRIT PRO+ SU21D

- UHF 2 Watts
- Single Channel
- Removable Belt Clip
- Transmit/Battery LED
- Rechargeable Battery
- Battery Charger
- Optional Coded Squelch
- Desk Charger Ready
- American Made

The SU21D *Spirit Pro+* provides a full 2 watts on UHF to make this model the ideal choice for quality communications in and around buildings and construction sites. The SU21D is supplied with: flexible antenna, NiCad battery pack, plug-in ten-hour wall charger, removable belt clip, operator's guide and FCC license application. The optional HLN3987 Coded Squelch may be installed by Universal to reduce "channel chatter" in congested areas. This is *the* affordable choice for a quality, hard-working, UHF radio. The SU21D comes with UHF J ❍ 467.7625 MHz channel unless specified otherwise. One year limited warranty.

List $269.00 *Order #3328* **$229.95** (+$5)

SPIRIT PRO+ SV12CDT



- VHF 1 Watt
- Dual Channel
- Removable Belt Clip
- Transmit/Battery LED
- Rechargeable Battery
- Desktop Drop in Charger
- Supplied Coded Squelch
- American Made

The SV12CDT provides 1 watt of power and **two** operating channels for increased flexiblility. The SV12CDT features a 10 hour drop-in desk charger tray. Other supplied items include: flexible antenna, NiCad battery pack, removable belt clip, operator's guide and FCC license application. The SV12CDT can operate in both OPEN and CODED (PL) squelch modes. (The PL tone can be user programmed). The SV12CDT comes with VHF Blue ❍ 154.570 MHz *and* Green ❍ 154.600 MHz channels unless specified differently. One year limited warranty.

List $349.00 *Order #2421* **$279.95** (+$6)

Family Radio Service

MIDLAND

75-510

- UHF FM
- 14 Channels
- Privacy Codes
- Backlit LCD
- Automatic Squelch
- NiCad Battery
- Wall Charger
- Flexible Antenna
- Auto Power Save
- Auto Time-out Timer

Here is a great way for the family to stay in touch during the next camping trip, hike or visit to the mall. The Midland 75-510 operates in the new **Family Radio Service** band (462-476 MHz). The range can be up to two miles (line of sight). Absolutely no license is required and there are no fees of any kind. Unlike CB walkie talkies, the compact Midland 75-510 provides clear, crisp interference-free FM communications. 14 UHF radio channels are featured. 38 user selectable CTCSS privacy codes per channel ensure uncluttered communications. This radio is ready to go and includes a non-removable flexible antenna, rechargeable nickel cadmium batteries, wall charger, belt clip and easy to use owner's manual. What a great and inexpensive way to have quality communications. Only 4¾" x 2½" 1¼". One year limited warranty.

List $229.00 *Order #0072* **$149.95** (+$5)

MOTOROLA Optional Accessories

Order #	Model	Item Description	Your Price	SV21D	SU21D	SV12CDT	SU22CDT
3332	**HMN9038**	Headset with Boom Mic	$54.95 (+$3)	■	■	■	■
0568	**HMN9039**	Earpiece with Mic	44.95 (+$3)	■	■	■	■
2334	**HMN9037**	VOX Adapter for BDN6773 or 6774	39.95 (+$3)	■	■	■	■
2715	**HAD9207**	VHF Mobile Magnetic Mount Antenna	34.95 (+$4)	■		■	
2562	**HAE9208**	UHF Mobile Magnetic Mount Antenna	34.95 (+$4)		■		■
3338	**HLN3039**	Tone Coded Squelch	48.95 (+$3)	■	■	❒	❒
3330	**MR6041210**	Leather Carry Case with Belt Clip	28.95 (+$3)	■	■	■	■
3333	**HMN9026**	Speaker Mic	54.95 (+$3)	■	■	■	■
3337	**HNN9056**	Extra Nicad Rechargeable Battery Pack	29.95 (+$3)	■	■	■	■
3336	**HTN9205**	Rapid Charger Tray for battery only (3 hour)	49.95 (+$3)	■	■	■	■

❒ = supplied

Frequently Asked Questions About Commercial Two-Way Radio

◆ **What is the range of these commercial radios?**
A radio's range depends on the area in which it is used. The range decreases around hills, dense trees, buildings and inside vehicles. The VHF models provide maximum range outdoors and around wooden structures. They would be a good choice for use on a farm, landscaping job or surveying. The UHF models provide better range in and around steel and concrete. The 1 watt modelhave a range of about 2 miles in flat terrain with few obstructions. The 2 watt models have a range of about 2¼ miles.

◆ **What is the Coded Squelch?**
In your location there may be other radio users sharing the frequency (channel). In an Open Squelch radio (without Coded Squelch), your radio will pick up *all* conversations on your channel within the radio's talk range. Models with the Coded Squelch (PL) will block out unwanted messages. Coded squelch is supplied on models SV12CD and SU22CDT.

◆ **Are these Motorola business radios like CB walkie talkies?**
No, these commercial quality, American made radios, provide crisp, clean, clear FM audio.

◆ **Do I need a license to legally operate these radios?**
Yes, a license application form #574 is included with each radio. While there is a fee, no exam is required.

◆ **May I return the radios (in orginal condition) if they do not serve my needs?**
Yes, the radios maybe returned within two weeks *without* a restocking fee (shipping not refundable).

◆ **How long will the battery last (based on a 90% standby, 5% transmit, 5% receive cycle)?**
The battery will operate for about 13 hours on the 1 watt model and about 8 hours on 2 watt models.

INTRODUCTION TO AMATEUR RADIO

Amateur radio is one of the most exciting and popular pastimes in the world. There are over one million "HAMS" operating from every end of the globe. You can "meet" a coal miner in Germany, a housewife in Australia, a missionary in India, or a research scientist in Antarctica ... all without leaving your living room.

The first Ham band starts at 1800 kHz; not far from the top end of the "AM" band. There are eight additional bands available to hams throughout the shortwave (H.F.) portion of the radio spectrum. Unlike "AM" broadcast signals, shortwave signals have the ability to consistently travel great distances. Shortwave ham signals will reflect (refract) off the invisible layer above the earth called the ionosphere. Hams operating on the amateur shortwave bands have the ability to talk all over the world. Beyond the shortwave ham bands lies an area of the radio spectrum called VHF (Very High Frequency). Hams also have special bands that they can talk on in the VHF region, UHF region and even above!

While long distance communications does occasionally take place on the VHF ham bands, these bands are usually used for local communications. Many hams have portable ("walkie-talkie") or mobile VHF radios to talk to other hams in their local area. Above the VHF portion of the radio spectrum lies still higher frequencies. Hams have additional bands in this region. Hams use UHF for local contacts, transmissions of TV signals, satellite communications and experimentation.

Hams use several methods to communicate with each other. When ham radio began over 60 years ago, all hams utilized Morse code. Morse remains a popular mode among amateur radio operators. Transmission by Morse code is an efficient, reliable and fun way to contact distant stations. Morse code operators use a set of standard abbreviations and procedures that virtually eliminates the language barrier. TNX FOR QSO OM ES 73 means "thank you for the contact and best wishes" in any language! Hams also operate "phone" (voice). On the shortwave bands, hams use a special transmission mode called "single side band" or SSB to transmit greater distances and effectively use their allocated frequencies. A third method that hams use to communicate is called radioteletype (RTTY). This mode requires extra equipment. In order to communicate by RTTY, each operator must have RTTY equipment which roughly resembles a typewriter. In this mode the hams simply type their messages back and forth. A new mode called Packet permits the high speed interchange of messages, data and programs between hams. Many RTTY operators are using specially equipped personal computers to accomplish this. Hams can even send pictures back and forth to each other over great distances! These modes are referred to as slow-scan TV (SSTV) and facsimile (FAX). But this is only the beginning! There are several special (US, Japanese and Russian) satellites circling the earth that hams can use. Hams transmit their signal into the satellite, then the satellite retransmits the signal back to earth, thus extending the "range" by a factor of 1000+! Some hams even use the moon to bounce their signals to a distant ham! Occasionally the *Space Shuttle* carries a crew member who is a ham. NASA lets astronaut hams take time out to communicate with their earth-bound fellow hams! Imagine the excitement of talking to the *Space Shuttle* as it passes overhead!

There are many aspects of amateur radio ... truly something for everyone! Many amateurs like to experiment (or just tinker!) with various antennas or circuits, others enjoy talking to distant stations (called working "DX"). Still others prefer to communicate with other local hams or experiment with the transmission of text or pictures.

Amateurs do more than communicate for pleasure and relaxation. In any civil emergency, where communications are disrupted, amateur radio operators are the first on the scene with trained people and reliable communications channels both locally and to remote locations. They work with the Red Cross, Disaster Services, and the Federal Emergency Management Agency as well as local health, welfare and safety agencies. Examples of recent events where hams have provided important services are: the California earthquake and hurricane Hugo. Hams also provide communications for marathons, road rallies, charity drives and similar civic activities.

There are over a million hams worldwide, operating from nearly every country on earth. In the U.S.A. alone there are over 400,000 amateurs. Amateur radio operators are required to obtain a license from the government before talking on the air. Getting your first amateur radio license is not difficult. Most start with an entry level license called the Novice license.

NOVICE LICENSE

In order to encourage people to participate in amateur radio, the government requirements for this first license are minimal. To get your novice "ticket", you must pass a 30 question multiple choice test on radio fundamentals and regulations, and demonstrate the ability to receive Morse code at the rate of 5 WPM. The questions on the "written" exam are easy. You can pass the exam after just a few evenings of study. Learning the code may take slightly longer, but getting to 5 WPM is not difficult. An hour or two of practice every night for two or three weeks is usually adequate. When you get your Novice ticket you can operate on 4 of the 8 shortwave (HF) bands using Morse code. You can also operate **voice mode** on one shortwave band (10 meters). Two bands above shortwave are now available to Novices. You can operate voice *or* data on 220 MHz and 1296 MHz. The world of global communications is now yours!

TECHNICIAN LICENSE

The new ***codeless*** Technician Class offers great privileges and requires passing a 55 question written test. No code proficiency is required! This test is administered by qualified amateur radio clubs several times a year. When you pass this test you will be granted full use of all the VHF (and higher) ham bands in any mode ... including voice! A technician license will permit operation on the popular 144 MHz band, called 2 meters. A variety of inexpensive mobile and hand-held 2 meter radios are available. Most cities have 2 meter "repeaters". The repeater antenna is usually on a tall building or tower. A repeater takes an input signal and then rebroadcasts it, substantially increasing the effective range of your radio! Many repeaters also have "auto-patch" capability to make phone calls from your car or walking down the street. The technician license will even allow you to operate through the new generation of ham satellites (which act like repeaters!) giving you worldwide range on VHF!

GENERAL LICENSE

The general class "ticket" is the most popular class of license. If you already have your technician class license, a 25 question written test and a 13 word per minute code test is required. Chances are that if you have been using Morse code (with your novice or technician license), your speed will automatically grow to 13 wpm after a few months of operating. The general "ticket" dramatically expands your operating privileges! You now can operate all modes on all ham bands including voice on all the shortwave (HF) phone bands for global communications. Many hams find the privileges of the general class adequate and do not seek to upgrade to higher licenses.

ADVANCED & EXTRA LICENSE

There are special band segments reserved for holders of the advanced and extra class licensees. Another written exam is required for the advanced class. The extra class requires another written and another code exam (20 wpm).

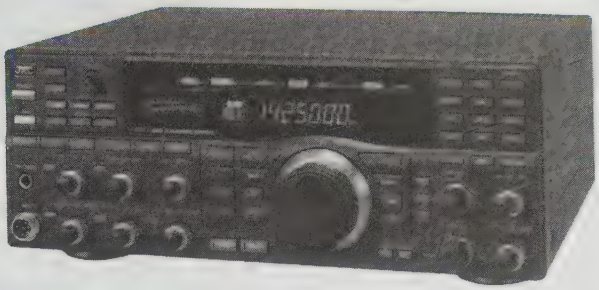
GETTING STARTED

There are several ways to get your first license. Universal has a variety of books to help you learn the "theory" of ham radio. Good code tapes are available to help you learn the code.

Many prospective hams buy a communications receiver (or transceiver) while they are studying for their "ticket". Universal has a nice selection of new and used receivers. A good receiver may be helpful for several reasons. There is a radio station (W1AW) which transmits code practice sessions every night for those learning the code. Copying these code drills is good preparation for your code test. You will also be able to listen to other amateurs, and start to learn the "language" and "buzz-words" of ham radio. Getting your first station on the air doesn't have to be expensive! Universal has a nice selection of inexpensive used equipment. Amateur radio equipment does not require any special wiring in your home. Antennas can be large, expensive and elaborate, or simple, unobtrusive and inexpensive. Most new hams string up a "dipole" antenna which we can supply for about $25.00. You are now ready to begin the lifetime adventure of amateur radio.

JRC Japan Radio Co., Ltd.

JST-145/245



Japan Radio's newest amateur transceiver is the JST-245. This extraordinary rig provides complete 160 to 10 meter coverage ***plus 6 meters*** in all modes (AM/FM/SSB/CW/RTTY). The built-in automatic antenna tuner is provided as standard equipment. Tuner settings are automatically stored in memory for fast QSY. Three antenna connections are user selectable from the front panel and can be stored in memory. The general coverage receiver tunes from 100 kHz to 30 MHz plus 48 to 54 MHz. Electronically tuned front-end filtering, quad FET mixer and quadruple conversion (triple on FM) ensures excellent dynamic range (>100 dB) and third order ICP of -20 dBm. Excellent I.F. bandwidth flexibility is assured with the variable Bandwidth Control. This permits the standard 2.4 kHz filter to be narrowed *continuously* to 800 Hz. Narrow SSB and CW filters for the second and third I.F. are available optionally. Other interference rejection features include Passband Shift (PBS), dual noise blanker, three step attenuation, I.F. notch, selectable AGC and all-mode squelch. Notch tracking is automatic. Once tuned, the I.F. notch filter will track the offending heterodyne (± 10 kHz) if the VFO frequency is changed. Very low phase noise is achieved through a single crystal Direct Digital Synthesis system. The serious CW operator will appreciate the full break-in, variable CW pitch, and built-in electronic keyer. Two separate VFOs are featured for split frequency operation. Memory registers store most recent VFO frequency, mode, bandwidth and other important parameters for each band. Each of the 200 memories stores frequency, mode, AGC and bandwidth. A built-in RS-232C interface facilitates computer control. The heavy duty, built-in power supply insures reliable and continuous use. The ergonomic layout, colored LCD display and thoughtful placement of controls ensure ease of operation. For a complete technical review of this product please see the September 1995 issue of ***QST*** magazine. Mic not included.

SPECIFICATIONS

Selectivity (-6dB)	AM	6 kHz
	SSB	2.4 kHz
		2.7 kHz [1]
	FM	12 kHz
Intermediate Freqs.	1st:	70.455 MHz
	2nd:	9.455 MHz
	3rd:	455 kHz
	4th	97 kHz
Sensitivity (-10 dBμ)..	0.3μV	1.6-30 MHz
	0.3μV	45-55 MHz
	SSB/CW (S/N=10dB)	
Image Ratio	>70 dB (1.8 - 30 MHz)	
IF Rejection	>70 dB (1.8 - 30 MHz)	
Frequency Accuracy .	± 10×10^{-6} or better.	
Frequency Stability ...	± 10 ppm 5-60 min.	
	± 2 ppm after 60 min.	
RIT/XIT Range	± 10 kHz	
PBS Range	± 1 kHz	
Notch Filter Att.	40 dB	
Audio Output	1 Watt at 4 Ohms.	
Output Power	10-150W adjustable	
Output Modes	AM/CW/SSB/FSK/FM	
3rd Order ICP	+20 dBm	
Power	115/230 VAC	
Antenna Impedance ..	50 ohms	
Dimensions	14" x 5.5" x 12" approx.	
Weight	26.4 Lbs. (34 Lbs. ship)	

[1] Standard *only* on JST-245.

◆ **SPECIAL NOTE:**
Universal Radio is a factory authorized service and sales center for Japan Radio Company products.

PRICING

JST-245 List Price $2990.00
JST-245 Discount Price
Order #0550 ..... **$2499.00**
Shipping/Handling/Insurance $21.00

The **Japan Radio JST-145** transceiver is virtually identical to the JST-245, but does ***not*** include: 6 meters, the Bandwidth Control feature, the 2.7 kHz filter or the built-in automatic antenna tuner.

PRICING

JST-145 List Price $2490.00
JST-145 Discount Price
Order #0145 ..... **$1899.00**
Shipping/Handling/Insurance $19.00

JRL-2000F

The Japan Radio Company **JRL-2000F** is the world's first MOSFET HF linear amplifier, designed using the same high technology found in Japan Radio Company's professional high-powered radio transmitters. The power amp incorporates 48 RF power MOSFETs to ensure low distortion and clean output, plus a high-speed automatic antenna tuner with a 1820 channel memory. In addition, a high efficiency switching power supply with a PFC to suppress AC line currents, an automatic antenna selector and a wireless remote control are among the JRL-2000F's many user-friendly features. 100 watt drive for 1 kW. We urge you to contact us to receive a color brochure on this most impressive device. All JRC amateur and shortwave radio products carry a one year limited warranty.

List $4899.00 *Order #0866* **$4199.00** (+ship)

OPTIONS AND ACCESSORIES

✦ **Japan Radio NVA-88 Speaker**	*Order #0667*	**$59.95** (+$5)
✦ **Japan Radio NVT-56 Desk Mic**	*Order #0215*	**99.95** (+$5)
✦ **Japan Radio NVT-58 Hand Mic** (Up-Down)	*Order #0044*	**38.95** (+$3)
✦ **Japan Radio NFG-97 Manual Antenna Tuner**	*Order #0829*	**299.95** (+$5)
✦ **Japan Radio NFG-183 Automatic Antenna Tuner**	*Order #0905*	**499.95** (+$6)
✧ **Japan Radio CFL-218A Filter** (1.8 kHz -6dB)	*Order #1225*	**139.95** (+$4)
✧ **Japan Radio CFL-231 Filter** (300 Hz -6dB)	*Order #0193*	**139.95** (+$4)
✧ **Japan Radio CFL-232 Filter** (500 Hz -6dB)	*Order #0290*	**139.95** (+$4)
✧ **Japan Radio CFL-251 Filter** (2.4 kHz -6dB)	*Order #2455*	**139.95** (+$4)
✧ **Japan Radio CFL-233 Filter** (1.0 kHz -6dB)	*Order #0294*	**139.95** (+$4)
✧ **Japan Radio CFL-316 Filter** (500 Hz -6dB) 9 MHz	*Order #1148*	**139.95** (+$4)
✧ **Japan Radio CFL-317 Filter** (1.8 kHz -6dB) 9 MHz	*Order #0950*	**139.95** (+$4)
✧ **Japan Radio CFL-318 Filter** (2.7 kHz -6dB) 9 MHz[1]	*Order #0947*	**139.95** (+$4)
✦ **Japan Radio CFQ-4794 Control Cable JRL2000**	*Order #1158*	**69.95** (+$4)
✧ **Japan Radio CCL-267 DTMF**	*Order #0732*	**119.95** (+$4)
✧ **Japan Radio CMF-144 Monitor Unit**	*Order #1334*	**109.95** (+$4)
✧ **Japan Radio CGD-135 Hi Stability Crystal Osc.**	*Order #1223*	**79.95** (+$3)

[1] Standard on JST-245.

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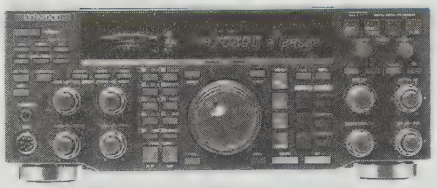
KENWOOD

TS-870S



- 160-10 Meters
- Digital Filtering
- Beat Canceller
- 100 Memories
- Xmit Equalizer
- 100W Output
- K1 Logic Keyer
- RX Ant Input
- Windows® Pgm.
- Dual VFOs
- RIT/XIT
- Opt. Voice Syn.
- IF Stage D.S.P.
- Dual Noise Reduction
- Auto Notch Filter
- Variable AGC
- Voice Equalizer
- RS-232C Port
- Auto Tuner RX/TX
- FM Tone Encoder
- Hi Speed Control
- Dual VFO Display
- Quick Memory
- Opt. Record Unit

Digital signal processing *at the IF stage* is now a reality with Kenwood's TS-870S HF transceiver. DSP technology uses a dedicated computer chip to convert analog waveforms into digital information in real-time, providing the opportunity to filter and enhance the quality of the signal before it is reconverted into analog form for the human ear. This new design uses two state-of-the-art 24-bit 20 MIPS DSP chips that provide for receiving enhancements to bring signals out of the noise. Imagine over 100dB out of pass band attenuation with virtually no signal loss by the DSP filter! Imagine CW bandwidth adjustable to 50 Hz. Advanced speech processing with transmit equalization that will make you the first in pile-ups! Plus complete computer operation and control of the TS-870S is possible with supplied MS Windows® software and a built-in RS-232C port. The built-in automatic antenna tuner works on all bands in both transmit and receive modes. Enjoy future technology now with the TS-870S. Supplied with hand mic. The TS-870S requires 13.8 VDC at 20.5 amps.

Kenwood TS-870S 160-10 Meters 12 VDC
List $3199.95 *Order #0870* **Please Call**

TS-50S

- Dual VFO's
- 100 Memories
- Scanning
- TF-Set
- CW Reverse
- AGC (slow/fast)
- Kenwood AIP
- RIT
- 100/50/10 Watts
- Menu Programming
- G.C. Rx (.5-30 MHz)
- DDS with "Fuzzy" logic
- Full or Semi Break-In
- All Mode Squelch
- IF Shift
- 12VDC 20A operation

Despite its compact size, the TS-50S has full-sized features and power. Output is adjustable to 10, 50 or 100 watts. Naturally it supports LSB, USB, CW AM and FM. Dual VFOs, 100 memories, AIP, RIT, IF shift, AGC and TF-set round out the features. Supplied with multi-function hand mic. 7 1/16 x 2 3/8 x 9 3/16" (6.4 Lbs.).

Kenwood TS-50S 160-10 Meters 12 VDC
List $1359.95 *Order #0868* **Please Call**

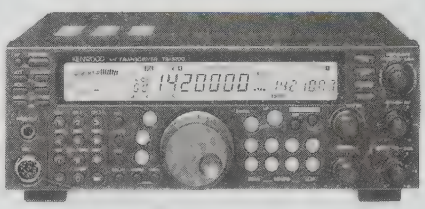
TS-950SDX

- DDS (1Hz.)
- IF Notch Filter
- CW Reverse
- 100 Memories
- AF Digital Filter
- SSB Slope Tuning
- Memory Keyer
- CW AF Tuning

The improved TS-950SDX has been redesigned and enhanced for the serious contester and DX'er. Its outstanding general coverage receiver is capable of receiving two frequencies simultaneously. This dual receiver function features independent: IF circuits, frequency selector with frequency step size, noise blanker with level control, AF control and frequency displays. Digital signal processing provides unsurpassed receiver and transmitter performance that is not possible with analog processing. The built-in microprocessor-controlled automatic antenna tuner is pre-programmed to quickly tune for minimum SWR. With MOS FET final, keyer, hand mic and more!

Kenwood TS-950SDX 160-10 Meters 120 VAC
List $5299.95 *Order #2949* **Please Call**

TS-570D/S



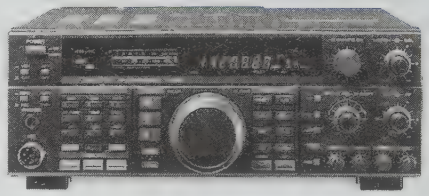
- 160-10 Meters
- Electronic Keyer
- 100 Memories
- 5~100W Output
- 16 Bit DSP
- CW Auto Tune
- Full and Semi Break-In
- 10 Hz Tuning

Now Kenwood offers Digital Signal Processing technology to everyone with the affordable TS-570D. This advanced design provides 16-bit DSP technology for superb audio, noise reduction, equalization and slope tuning. Power output can be set from 5 ~ 100 watts. A preset auto antenna tuner and electronic keyer are built in. The menu system offers 46 types of functions for novice thru extra. Full and semi break-in, dedicated packet port and 57600 bps PC control. Keypad entry, 100 memories, IF shift, Scanning and CW Auto Tune round out the many features of this transceiver.

Kenwood TS-570D 160-10 Meters 12 VDC
List $1819.95 *Order #1570* **Please Call**

Kenwood TS-570S 160-6 Meters 12 VDC
List $2179.95 *Order #3397* **Please Call**

TS-450SAT / 690S



- 160-10 Meters
- IF Shift
- IF Notch Filter
- Scanning
- All Mode Operation
- DDS
- Dual Noise Blanker
- Fine Tuning Function

This high-performance HF transceiver from Kenwood combines the best features of the legendary TS-440S with new state of the art features. Enjoy DDS (Direct Digital Synthesizer), 108 dB dynamic range, 100 memories, digital bar meter, dual noise blankers and all-band, all-mode operation with general coverage rx. With hand mic. The TS-450SAT includes a built-in antenna tuner. The availability of this model is limited.

Kenwood TS-450SAT 160-10 Meters 12 VDC
List $1649.95 *Order #1626* **Please Call**

The TS-690S includes all the great features of the TS-450S plus 6 Meter operation (no ant. tuner).

Kenwood TS-690S 160-6 Meters 12 VDC
List $1769.95 *Order #1513* **Please Call**

Model	Rx Range	Conversion	HF Sensitivity	Selectivity -6dB	Notch Att.	Audio	Memories	Transmit Power	Required P.S.	Current
TS-950S	.1-30 MHz	Quadruple	< .20 µV	6 / 2.4 [12 FM] kHz	> 45dB	1.5 W	100	150 watts PEP output	120 VAC	850W
TS-870S	.1-30 MHz	Quadruple	< .20 µV	9/2.3/.5/.2 [14 FM] kHz	> 40dB	1.5 W	100	100 watts PEP output	12 VDC	20.5 A
TS-570D	.1-30 MHz	Triple	< .20 µV	>4 / >2.2 [12 FM] kHz	N / A	1.5 W	100	100 watts PEP output	12 VDC	20.5 A
TS-450S	.5-30 MHz	Triple	< .25 µV	>5 / >2.2 [12 FM] kHz	> 20dB	1.5 W	100	100 watts PEP output	12 VDC	20.5 A
TS-690S	.5-30 MHz	Triple	< .25 µV	>5 / >2.2 [12 FM] kHz	> 20dB	1.5 W	100	100 watts PEP output[2]	12 VDC	20.5 A
TS-50S	.5-30 MHz	Double	< .25 µV	>5 / >2.2 [12 FM] kHz	N / A	2.0 W	100	100 watts PEP output	12 VDC	20.5 A

KENWOOD

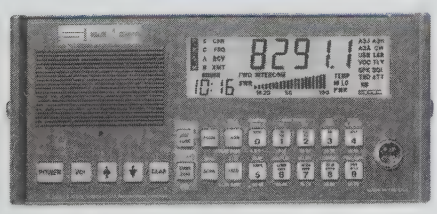
Optional Accessories

Order #	Model	Item Description	List Price	Your Price	TS-570D/S	TS-950S	TS-870S	TS-850S	TS-450S/690S	TS-140S	TS-50S
3197	AT-50	External Automatic Antenna Tuner	$379.95	$329.95 (+$7)							■
1166	AT-450[1]	Internal Automatic Antenna Tuner	279.95	249.95 (+$6)					◆		
1904	DRU-2	Digital Recorder	149.95	139.95 (+$3)		■		■			
0408	DRU-3	Digital Recorder	139.95	119.95 (+$3)			■				
2195	DRU-3A	Digital Recorder	139.95	129.95 (+$4)	■						
0357	HS-5	Deluxe Headphones	79.95	69.95 (+$4)	■	■	■	■	■	■	
0358	HS-6	Lightweight Headphones	59.95	52.95 (+$4)	■	■	■	■	■	■	
1105	IF-232C	Translator-Control Unit	129.95	109.95 (+$4)	■	■	■	■	■	■	
3196	IF-10D	Computer Interface Unit	89.95	76.95 (+$3)							■
1724	LF-30A	Low Pass Filter 1KW	64.95	57.95 (+$3)	■	■	■	■	■	■	■
0212	MB-13	Mobile Mounting Bracket	55.95	49.95 (+$3)							■
0387	MB-430	Mobile Mounting Bracket	49.95	44.95 (+$3)	■				■	■	
0230	MC-43S	Hand Mic With Up/Down 8 Pin	59.95	54.95 (+$3)	■	■	■	■	■	■	■
0368	MC-60A	Deluxe Desktop Mic With Preamp	159.95	139.95 (+$5)	■	■	■	■	■	■	■
1026	MC-80	Desktop Microphone With Preamp	119.95	99.95 (+$5)	■	■	■	■	■	■	■
1870	MC-90	DSP Compatible Deluxe Desktop Mic	269.95	239.95 (+$6)	■	■	■				
0369	PC-1A	Phone Patch	139.95	129.95 (+$5)	■	■	■	■	■	■	
1948	PG-2Y	DC Power Cable	39.95	34.95 (+$3)							■
0391	PG-2Z	DC Power Cable	37.95	34.95 (+$3)	■		■	■	■	■	
1117	PS-33	Standard Power Supply 13V at 20 A	239.95	219.95 (+$9)					■		■
3268	PS-40	Standard Power Supply 13V at 20 A	229.95	199.95 (+$9)	■		■	■	■	■	■
1698	PS-52	Heavy Duty Power Supply 13V at 20 A	309.95	269.95 (+$9)			■	■			
2816	PS-53	Heavy Duty Power Supply 13V at 20 A	289.95	259.95 (+$9)	■				■		■
3031	RM-1	Remote Function Keypad	59.95	52.95 (+$4)				■			
1547	SM-230	Station Monitor Scope & Pan Display	1199.95	999.95 (+$9)		■	■	■			
0404	SO-1	High Stability TCXO	244.95	219.95 (+$4)							
1597	SO-2	High Stability TCXO	189.95	169.95 (+$3)	■		■	■	■		
0692	SP-23	External Speaker	89.95	79.95 (+$4)	■				■		
0694	SP-31	External Speaker	99.95	89.95 (+$4)			■	■			
0890	SP-41	Compact Mobile Speaker	49.95	44.95 (+$4)	■				■	■	■
1349	SP-50B	Mobile Speaker	55.95	48.95 (+$4)	■				■	■	■
1653	SP-950	External Speaker With Filters	159.95	139.95 (+$6)		■					
1690	SW-2100	SWR/Power Meter	174.95	149.95 (+$4)	■	■	■	■	■	■	■
0228	TU-8	CTCSS Encoder Unit	54.95	46.95 (+$3)					■	■	
2982	VS-2	Voice Synthesizer	69.95	59.95 (+$3)		■	■	■	■		
2702	VS-3	Voice Synthesizer	39.95	36.95 (+$3)	■						
1282	YG-455C1	500 Hz CW Filter For 455 kHz IF	169.95	149.95 (+$3)				■	■	■	
1897	YG-455CN1	250 Hz CW Filter For 455 kHz IF	179.95	164.95 (+$3)		■		■	■		
0733	YK-88A1	6 kHz AM Filter For 8.83 MHz IF	104.95	94.95 (+$3)							
0734	YK-88C1	500 Hz CW Filter For 8.83 MHz IF	139.95	124.95 (+$3)	■			■	■		
2877	YK-88CN1	270 Hz CW Filter For 8.83 MHz IF	139.95	124.95 (+$3)	■			■	■		
0570	YK-88S1	2.4 kHz SSB Filter For 8.83 MHz IF	139.95	124.95 (+$3)					■		
1154	YK-88SN1	1.8 kHz SSB Filter For 8.83 MHz IF	139.95	124.95 (+$3)	■	■		■	■		
1957	YK-107C	500 Hz CW Filter	139.95	124.95 (+$3)							■
2288	YK-455C1	500 Hz CW Filter For 455 kHz IF	114.95	109.95 (+$3)					■	■	

◆ Does not operate on 6M when used in TS-690S

SGC

SG-2000



- 644 ITU Chan.
- 150 W PEP
- Huge LCD
- Scanning
- 100 User Channels
- Receive .5-30 MHz
- Transmit 1.6-30 MHz
- Remotable Head

The SG-2000 1.6 to 30 MHz synthesized SSB radiotelephone transceiver may be the most technically advanced, competitively priced HF-SSB radio in the world. It is designed to meet the needs of industrial, aviation, maritime and paramilitary customers worldwide. A variety of heads and special accessories are available to tailor this versatile radio to virtually any application. Requires 12 VDC 16 Amps. 4.7" x 10" x 15" 12 Lbs. Built to commercial specifications in America.

SG-2000 HF Transceiver
List $1695.00 *Order #0352* **$1499.00** (+$15)

SG-2000 +230 HF Transceiver & SG-230 Tuner
List $2490.00 *Order #3553* **$1699.00** (+$21)

Optional Accessories

SG-RM **Mobile Remote Head**
Order #3508 **$399.95** (+$7)

SG-230 **Smartuner 500W**
Order #2834 **$459.95** (+$9)

SG-230PRO **Smartuner Professional**
Order #3554 **$769.00** (+$10)

SG-500 **Power Cube 1000W**
Order #3552 **$1099.00** (+$13)

POWER CLEAR **Add on DSP Unit**
Order #0310 **$299.95** (+$6)

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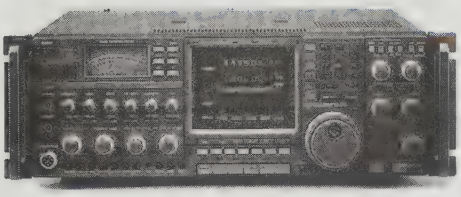
ICOM IC-781



A total communications masterpiece is the only way to describe the worlds most advanced HF transceiver. The built-in multifunction five inch CRT display, spectrum scope, dual watch receive, standard wide and narrow filters for both SSB and CW, iambic keyer, 99 tunable memories, 105 dB dynamic range, 150 Watts of RF output power, fully adjustable noise blanker and AGC circuits, all mode operation plus many more features combine to make the Icom IC-781 the highest performing HF transceiver available on the market today, truly an amateur's dream rig.

- 5" CRT Display
- Dual Watch
- Spectrum Scope
- .10-30 MHz Rec.
- 99 Memories
- Adjustable AGC
- Adjustable NB
- Adjustable Notch
- 10 dB Preamp
- 105 dB Dyn. Range
- 150 Watts Output
- 100% Duty Cycle
- Full Break-in CW
- CW Pitch Control
- Terminal Monitor
- CI-V Interface
- Twin PBT
- Direct Digital Syns.

Icom 781 160-10 Meters 120VAC
List $8000.00 *Order #2435* **Call for price.**

IC-775 DSP

The IC-775 DSP features Icom's exclusive new Direct Digital Synthesizer System that uses a new PLL which operates without a mixer and uses a single crystal to provide exceptional stability. CW operators will love the memory keyer, CW pitch, CW reverse, full break-in and two key jacks. The 200 watt MOSFET PA provides excellent signal quality and good IMD characteristics. Dual receivers with independent dials and lock are featured. These high tech features make the Icom 775 DSP a truly super advanced HF all band rig. With hand mic.

- .1-30MHz Rec.
- RIT / XIT
- IF Shift
- Adjustable NB
- Twin PBT
- Dual VFO'S
- Scanning
- HPF/LPF
- Tone & Balance
- Direct Digital Synt.
- Electronic Keyer
- Antenna Tuner
- MOSFET PA
- Notch Filter
- Independent Dials
- Multi-Mode
- Speech Comp.
- Dual watch VFOs

Icom 775 DSP 160-10 Meters 120VAC
List $4760.00 *Order #3415* **Call for price.**

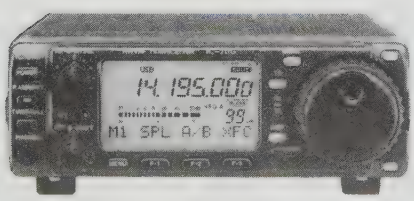
IC-756

The model 756 covers all nine HF ham bands plus 6 meters (Rx from 30 kHz - 60 MHz). The high resolution 4.9" dot matrix LCD display provides more operating information than you've ever had before, including a spectrum scope (±12.5, ±25, ±50 or ±100 kHz). The newly designed DSP digitally transposes transmit and receive audio components to produce desired AF frequency characteristics at the IF stage and, in addition, performs: noise reduction, automatic notch, PSN modulation/demodulation and selectable APF. Twin PBT really knocks out QRM. With hand mic.

- Spectrum Scope
- 101 Memories
- RIT/XIT
- Noise Blanker
- VOX Function
- Selectable APF
- Squelch
- Dual Watch
- 100 W Ouput
- Built-in Auto Ant Tuner
- Full Break-in CW
- Twin PBT
- 100% Duty Cycle
- Rx Antenna Jack
- DSP Notch
- 1 Hz Readout
- Memory Keyer
- RF Atten. 6/12/18 dB

Icom 756 160-6 Meters 12 VDC
List $2834.00 *Order #0095* **Call for price.**

IC-706



The IC-706 represents Icom's first *Next Generation* rig. This incredibly small all-mode transceiver provides 100 watts on HF and 6 meters *and* 10 watts on 2 meters. It receives from 30 kHz to 150 MHz (to 200 MHz with modification). It features a removable, remoteable, front panel that allows control of all features. The large LCD display features alphanumeric memory names and soft key descriptions. Despite its compact size (6.56" x 2.28" x 7.88"), it has big, easy to use control dials. First ever! Nothing else like it! With hand mic.

- .3-150 MHz Rx.
- Alpha memories
- RIT/SHIFT
- Preamp/ATT
- VFO A/B
- 1 Hz Display
- IF Shift
- Scanning
- S/RF Meter
- 100 W HF+6M
- 10 W 2M
- 100 Memories
- All band Multimode
- Removable head
- Premap/RF Atten.
- Mini Spectrum Scope
- Electronic Keyer
- SSB Carrier Point

Icom 706 160-10 Meters +6M +2M 12 VDC
List $1599.00 *Order #1062* **Call for price.**

Model	Rx Freq Range	Conversion	HF Sensitivity	Selectivity -6dB	Notch Att.	Audio	Memories	Transmit Power	Required P.S.	Current
IC-781	.1-30 MHz	Quadruple	< .16 µV	6 / 2.4 /.5 /.25 kHz [1]	> 45 dB	2.6 W	99	150 watts output	110 / 240 VAC	760 VA
IC-775DSP	.1-30 MHz	Quadruple	< .15 µV	6 / 2.4 /.5 kHz [1]	> 45 dB	2.6 W	101	200 watts output	110 / 240 VAC	760 VA
IC-756	.3-30 MHz & 6m	Quadruple	< .15 µV	6 / 2.1 kHz [2]		2.0 W	101	100 watts output	12 VDC	20 A
IC-706	.5-30 & 2 & 6m	Double/Triple	< .16 µV	6 / 2.3 kHz [1]		2.0 W	100	100 watts (10W 2M)	12 VDC	20 A

[1](15 kHz FM) [2](12 kHz FM)

ICOM

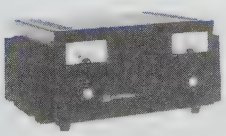
Optional Accessories

Order #	Model	Item Description	List Price	Your Price	IC-781	IC-775	IC-738	IC-756	IC-728	IC-706
0476	AH-3	Mobile HF Automatic Antenna Tuner	$653.00	$549.95 (+$9)			■		■	■
1767	AT-150	HF 100W Automatic Antenna Tuner	638.00	539.95 (+$7)			■		■	
3438	AT-180	HF+6M Automatic Antenna Tuner	599.00	499.95 (+$7)						■
0106	AT-500	500 Watt Automatic Antenna Tuner	1095.00	949.95 (+$7)	■	■	■		■	
0060	CR-64	High Stability Crystal Unit	125.00	109.95 (+$3)					■	
2137	CR-282	High Stability Crystal Unit	134.00	114.95 (+$3)		■	■		■	
3439	CR-502	High Stability Crystal Unit	76.00	69.95 (+$3)				■		■
0785	CT-16	Satellite Interface Unit	128.00	109.95 (+$5)	■	■	■		■	■
2771	CT-17	CI-V Level Converter	135.00	119.95 (+$5)	■	■	■	■	■	■
3086	EX-627	HF Automatic Antenna Selector	410.00	359.95 (+$4)	■	■	■		■	■[1]
0903	FL-52A	500 Hz CW Filter 455 kHz	196.00	169.95 (+$3)			■	■		
0909	FL-53A	250 Hz CW Filter 455 kHz	196.00	169.95 (+$3)		■	■			
2968	FL-100	500 Hz CW Filter 9 MHz	106.00	92.95 (+$3)			■	■	■	■
2999	FL-101	250 Hz CW Filter 9 MHz	106.00	92.95 (+$3)		■	■	■	■	
1776	FL-102	6 kHz AM Filter 9 MHz	75.00	64.95 (+$3)		■				
1433	FL-103	2.8 kHz SSB Filter 9 MHz	98.00	84.95 (+$3)	■					■
0327	FL-222	1.9 kHz SSB Filter 455 kHz	199.00	169.95 (+$3)		■		■		
2312	FL-223	1.9 kHz SSB Filter 9 MHz	84.00	74.95 (+$3)		■		■		■
2712	FL-232	350 Hz CW Filter	90.00	79.95 (+$3)				■		
3288	FL-257	3.3 kHz SSB Filter	?	?				■		
1295	HM-12	Hand Microphone	59.00	52.95 (+$3)				■		
1951	HM-36	Hand Microphone With Up / Down	59.00	52.95 (+$3)	■	■	■		■	
3431	MB-62	Mobile Mounting Bracket	20.00	18.95 (+$3)						■
3432	MB-63	Mobile Mounting Bracket for Head Only	14.00	12.95 (+$3)						■
2592	OPC-025A	DC Power Cable	23.00	20.95 (+$3)			■			
3434	OPC-581	Separation Cable 11.5 Ft. (3.5M)	48.00	43.95 (+$3)						■
3435	OPC-587	Separation Cable 23.0 Ft. (7.0M)	63.00	58.95 (+$3)						■
1120	OPC-589	Adapter Cable (8 pin to modular mic)	28.00	25.95 (+$3)						■
3436	OPC-599	Adapter Cable (7+8 pin acc. to 13 pin acc)	48.00	44.95 (+$3)						■
0110	PS-15	Standard Power Supply 13.8V At 20A	200.00	169.95 (+$11)			■		■	■
1801	PS-30	Heavy Duty Power Supply 13.8V At 25A	466.00	399.95 (+$12)			■		■	
1189	PS-55	Heavy Duty Power Supply 13.8V At 20A	286.00	249.95 (+$9)			■		■	
1453	PS-85	Heavy Duty Power Supply 13.8V At 20A	325.00	269.95 (+$8)				■		■
2470	SM-6	Desk Microphone	102.00	89.95 (+$3)	■		■		■	
0964	SM-8	Desk Microphone With Up / Down	160.00	139.95 (+$4)	■	■	■		■	■[2]
2561	SM-20	Desk Microphone With Up / Down	207.00	179.95 (+$5)	■	■	■	■	■	■[2]
0107	SP-3	External Speaker Base	112.00	99.95 (+$6)			■		■	
0172	SP-7	External Speaker Base	75.00	64.95 (+$5)			■		■	
1866	SP-10	External Speaker Mobile	55.00	47.95 (+$4)						■
2524	SP-12	External Speaker Mobile Slimline	32.00	28.95 (+$4)						■
1672	SP-20	External Speaker With Audio Filters	248.00	214.95 (+$6)	■	■	■		■	
1473	SP-21	External Speaker Base	110.00	99.95 (+$6)		■	■	■		
1399	UT-30	Programmable CTCSS Tone Unit	44.00	38.95 (+$3)			■		■	
3084	UT-66	Voice Synthesizer Unit	66.00	59.95 (+$3)		■				
3437	UT-102	Voice Synthesizer Unit	59.00	52.95 (+3)				■		■

[1] Requires optional OPC-599 [2] Requires optional OPC-589

ASTRON

VS-50M



Astron power supplies feature solid-state electronic regulation, fold back current limiting for protection from excessive current and shorted output. Crowbar over voltage protection is also provided on all models except the RS-4A. These high-quality power supplies are manufactured in the U.S. and carry a full one year limited warranty.

Order #	Model	Continuous Duty Amps	ICS Amps	Size(in) HxWxD	Shipping Weight (Lbs.)	List Price	Your Price	Ship
2505	RS- 4A	3	4	3¾ x 6½ x 9	7	$59.95	$49.95	$6
2506	RS- 7A	5	7	3¾ x 6½ x 9	9	69.95	59.95	8
2507	RS-12A	9	12	4½ x 8 x 9	13	99.95	84.95	9
2508	RS-20A	16	20	5 x 9 x 10½	18	121.95	99.95	10
2510	RS-20M	16	20	5 x 9 x 10½	18	144.95	129.95	11
2509	RS-35A	25	35	5 x 11 x 11	27	197.95	159.95	15
2511	RS-35M	25	35	5 x 11 x 11	27	223.95	179.95	16
1815	RS-50A	37	50	6 x 13¾ x 11	46	285.95	229.95	20
1045	RS-50M	37	50	6 x 13¾ x 11	46	314.95	249.95	21
2369	SL-11A	9	11	3 x 7¾ x 9¾	16	90.95	74.95	9
0039	VS-20M	16[1]	20[1]	5 x 9 x 10½	20	170.95	139.95	11
0756	VS-35M	25[1]	35[1]	5 x 11 x 11	29	238.95	199.95	16
2994	VS-50M	37[1]	50[1]	6 x 13¾ x 11	46	330.95	269.95	21

[1] At 13.8 VDC

YAESU

FT-1000

- Dual Receive
- Dual Display
- IF Shift
- IF Notch
- 99 Memories
- Headphone Mixing
- Var. Bandwidth Tun.
- Rx. Antenna Selector
- RX Preamp
- CW LED Tuning
- CW Audio Filter
- Squelch
- Electronic Keyer
- 150 W. Output SSB
- 200 W. Output CW
- Optional Voice Syn.

The Yaesu FT-1000 addresses the needs of world class DX'ers and contesters. It has advanced features such as dual general coverage receive with separate tuning controls, separate audio balance, separate frequency displays and independent filter selection for each receive channel. A mixing switch allows for dual receive reception while using headphones (stereo headphones required). Standard filter bandwidths of 6.0, 2.4, 2.0, .5 and .24 kHz, offer the selectivity needed for today's crowded band conditions. A front panel mounted antenna switch provides instant access to the optimum antenna for the moment. The optional DVS-2 Digital voice system makes phone contests a breeze with "CQ Contest" messages. The all new direct digital synthesizer and narrow range PLL provide low phase noise operation. CW operators will like the CW LED tuning indicator, audio peak filter, variable CW TX offset and the 200+ watts of output power. All of this and more, make this offering from Yaesu a high performing HF transceiver for the most demanding operator. With hand mic.

Yaesu FT-1000 160-10 Meters 120 VAC
List $4399.00 *Order #1841* **Call for price.**

Yaesu FT-1000D Deluxe Version
List $5459.00 *Order #0275* **Call for price.**

FT-1000MP

- Dual Receive
- Dual Blankers
- Shuttle-jog Tune
- Adjustable NB
- AM Synchronous Tune
- Collins Filters
- Enhanced DSP
- 13 tuning steps

Yaesu's introduction of Enhanced Digital Signal Processing gives you an impressive array of competitive tools including: EDSP IF demod., EDSP Noise Reduction, EDSP Contour Selections, EDSP Automatic Multiple Notch Filter, EDSP Audio Equalization, EDSP Tx Modulation Equalization and EDSP TX Bandpass Filtering. An outstanding receiver, with Collins filters and tuning resolution down to .625 Hz is featured. An ergonomic dream to operate. With hand mic.

Yaesu FT-1000MP 160-10 Meters 120 VAC
List $3699.00 *Order #0320* **Call for price.**

Yaesu FT-1000MPDC 160-10 M. 12 VDC (20A).
List $3399.00 *Order #2279* **Call for price.**

FT-990

- .1-30 MHz Rec.
- 90 Memories
- 500 Hz CW Filter
- IF Shift
- Adjustable NB
- Adjustable RF Power
- 100 Watts Output
- Electronic Keyer
- Full Break-in CW
- Automatic AT

The FT-990 has many of the features of the FT-1000 such as multiple direct digital synthesizers and a magnetic rotary encoder for smooth, silent tuning. The keypad provides one-touch band selection with two independent VFO's for each band. CW features include: a built-in iambic memory keyer, presettable BFO offset and spotting button plus a built-in 500 Hz filter. With hand mic. All Yaesu amateur products carry a 1 year limited warranty.

Yaesu FT-990 160-10 Meters 120 VAC
List $2759.00 *Order #1517* **Call for price.**

Yaesu FT-990DC 160-10 M. 12 VDC. No CW filter
List $2319.00 *Order #1913* **Call for price.**

FT-900C/CAT

- .1-30 MHz Rec.
- LCD Display
- IF & Notch
- Automatic AT
- Dual VFO'S
- Adj. RF Output 100W
- Electronic Keyer
- Full/Semi Break-in CW
- Direct Freq. Entry
- Detachable Head

The FT-900's lightweight, detachable sub-panel permits separating the transceiver and mounting the main unit in a remote location. This enables you to keep the most commonly used front-panel controls and display where you need them. Two independent VFOs for each band hold frequencies and mode settings. 100 memories store all of this data for both VFOs, giving a total of 220 independent sets of frequency, mode and other selections. With hand mic.

Yaesu FT-900C 160-10 Meters 12 VDC
List $1619.00 *Order #2557* **Call for price.**

Yaesu FT-900CAT 160-10 Meters 12 VDC
List $1819.00 *Order #1452* **Call for price.**

FT-840

- .1-30 MHz Rec.
- 100 Memories
- LCD Display
- IF Shift
- Noise Blanker
- Adjustable RF Power
- 100 Watts Output
- Attenuator
- Dual VFO's
- Squelch

The compact FT-840 has two direct digital synthesizers and rotary encoder that provide silky-smooth tuning. The excellent general coverage receiver tunes .1-30 MHz in 10 Hz steps. The FT-840 uses a die-cast RF power amp with thermally switched fan to ensure full power output (up to 100 watts). The digitally synthesized local signals ensure clean, low-noise transmitter output on all HF amateur bands. Other features include IF shift, reverse CW, dual VFOs, 100 memories, attenuator, noise blanker, meter, scan modes and speech processor. With hand mic.

Yaesu FT-840 160-10 Meters 12 VDC
List $1099.00 *Order #2319* **Call for price.**

Model	Rx Freq Range	Rx Conversion	HF Sensitivity	Selectivity -6dB	Notch Att.	Audio	Memories	Transmit Power	Required P.S.	Current
FT-1000	.10-30 MHz	Quadruple	< .25 µV	6 / 2.2/ 1.8 / .5 / .24	>30 dB	2.0 W	99	200 watts output	110 / 240 VAC	1050 VA
FT-1000MP	.10-30 MHz	Quadruple	< .25 µV	4 / 2.2/ 2 / .5 / .25	>30 dB	1.5 W	99	100 watts output	110 / 240 VAC	
FT-990	.10-30 MHz	Triple	< .25 µV	6 / 2.2/ 1.8 / .5	N / A	2.0 W	90	100 watts output	110 / 240 VAC	470 VA
FT-990DC	.10-30 MHz	Triple	< .25 µV	6 / 2.2/ 1.8	N / A	2.0 W	90	100 watts output	12 VDC	25A
FT-900C	.10-30 MHz	Double	< .25 µV	6 / 2.2 kHz	>30 dB	1.5 W	100	100 watts output	12 VDC	20A
FT-840	.10-30 MHz	Double	< .25 µV	6 / 2.2 kHz	N / A	1.5 W	100	100 watts output	12 VDC	20A

YAESU

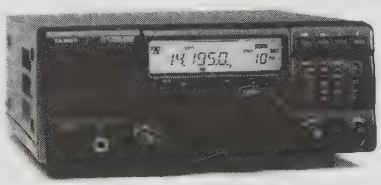
Optional Accessories

Order #	Model	Item Description	List Price	Your Price	FT-1000	FT-1000MP	FT-990	FT-840	FT-900
1793	ATU-2	Internal Auto Antenna Tuner	$301.00	$259.95 (+$5)					■
2061	BPF-1	Dual Band Pass Filter	196.00	179.95 (+$3)	■				
3199	DVS-2	Digital Voice Recording Unit	238.00	209.95 (+$3)	■	■	■	■	■
0322	FIF-232C	RS-232C Interface Unit	95.00	89.95 (+$4)	■		■	■	■
1663	FC-10	External Automatic Antenna Tuner	399.00	369.95 (+$6)				■	
0240	FC-800	External Remote Antenna Tuner	525.00	489.95 (+$6)				■	■
0235	FM-747	FM Mode Unit	62.00	58.95 (+$3)				■	
2829	FP-800	12 VDC Power Supply 20 A.	349.00	309.95 (+$9)				■	■
0844	FRB-757	Relay Box	31.00	29.95 (+$3)	■		■		
0274	LL-5	Phone Patch (mounts in SP-5/6)	143.00	139.95 (+$4)	■		■	■	■
1941	LL-7	Phone Patch (mounts in SP-8)	153.00	149.95 (+$4)		■			
0287	MD-100A8X	Desk Top Microphone	138.00	119.95 (+$5)		■			
0258	MH-1B8	Hand Held Microphone	30.00	28.95 (+$4)	■		■		
0824	MMB-20	Mobile Mounting Bracket	34.00	29.95 (+$3)				■	■
0551	MMB-62	Mobile Controller Bracket	39.00	26.95 (+$3)					■
0273	SP-5	External Speaker With Audio Filter	157.00	149.95 (+$6)	■		■		
2730	SP-6	External Speaker With Audio Filter	157.00	149.95 (+$6)			■	■	■
2599	SP-7	External Mobile Speaker	40.00	34.95 (+$3)					■
1789	SP-8	External Speaker With Audio Filter	173.00	159.95 (+$4)		■			
0247	TCXO-1	High Stability Oscillator <±.5 ppm	190.00	179.95 (+$3)	■				
1579	TCXO-2	High Stability Oscillator	157.00	144.95 (+$3)			■		
0736	TCXO-3	High Stability Oscillator	79.00	74.95 (+$3)					■
3176	TCXO-4	High Stability Oscillator <±20 ppm	99.00	94.95 (+$3)		■		■	
0588	TCXO-6	High Stability Oscillator <±.5 ppm	190.00	179.95 (+$3)		■		■	
1229	XF-110C	500 Hz CW filter	157.00	144.95 (+$3)	■				■
1921	XF-110CN	250 Hz CW filter	157.00	144.95 (+$3)	■				■
2416	XF-455K2510	250 Hz CW filter	189.00	169.95 (+$3)			■		
2537	XF-455MC	600 Hz Filter (Sub Rx)	157.00	144.95 (+$3)	■				
3178	YF-110CN	250 Hz Filter (3rd IF)	157.00	144.95 (+$4)		■			
0758	YF-110SN	2.0 kHz Filter (3rd IF)	157.00	144.95 (+$4)		■			
2869	YF-114CN	250 Hz Filter (2nd IF)	157.00	144.95 (+$4)		■			
1681	YF-114SN	2.0 kHz Filter (2nd IF)	157.00	144.95 (+$4)		■			
1551	YF-112A	6.0 kHz Filter	127.00	119.95 (+$4)				■	
1914	YF-112C	500 Hz Filter	127.00	119.95 (+$4)				■	
2194	YF-115C	500 Hz Filter (3rd IF or Sub Rx)	173.00	159.95 (+$4)		■			
2342	YH-77STA	Stereo Headphones (see pg. 26)	51.00	47.95 (+$4)	■	■	■		■
2476	YSK-900	Remote Cable Kit 20 Ft.	68.00	59.95 (+$3)					■

Prices and specifications are subject to change without notice. Universal Radio is not responsible for typographical errors.

YAESU

FT-600



The Yaesu FT-600 H.F. transceiver puts the emphasis on simplicity, performance and easy operation. Street price is under $1000 on this versatile 160 through 10 meter transceiver. Please call for details, exact price and availability.

Yaesu FT-600 160-10 Meters
List $1249.00 *Order #0744* **Call for price.**

DX-70T/TH

- .15-30, 50-54 Rx.
- 160-6 meters
- 100 Memories
- 100 Watts HF Out
- LCD Display
- 10 Watts 6M Out
- IF Shift
- Dual VFO's
- Noise Blanker
- Built-In Preamp

The DX-70T covers 160 to 6 meters in SSB, CW, AM and FM. The receiver tunes .15-30 MHz and 50-54 MHz. The transmitter delivers a powerful 100 watts (50W switchable) in SSB, CW and FM (10 watts on 6M). The detachable control head offers remote operation and flexibility not seen on other rigs of the same size. Powerful CW operation offers selectable upper/lower BFO, selectable sidetone, high speed full QSK and semi break-in with automatic timing set. A built-in narrow band filter and pre-amp is standard. Other features include: IF shift, dual VFOs, 100 memories, built-in CTCSS encode, attenuator and NB. All Alinco products carry a 1 year limited warranty.

Alinco DX-70T 160-6 Meters 12 VDC
List $957.00 *Order #1662* **Call for price.**
Alinco DX-70TH As above, but with 100W on 6M.
List $1074.00 *Order #0033* **Call for price.**

SPECIFICATIONS

Power	13.8 VDC 20 Amps
Selectivity (-6dB)	6, 2.4, 1, .5 kHz [9 FM]
Sensitivity (-10 dBμ)	0.25μV 1.8-54 MHz SSB/CW (S/N=10dB)
Operating Modes	USB/LSB/CW/AM/FM
Output CW/SSB/FM	50/100W (10W on 6M)
Output AM	40W (4W on 6M)
Dimensions	7" x 2.25" x 9.2" approx.
Weight	6 Lbs. (8 Lbs. ship)

Optional Accessories

EDX-1 Manual Antenna Tuner
Order #3401 $259.95 (+$5)

EDS-4 Front Control Remote Cable
Order #3402 $28.95 (+$5)

EDS-5 Microphone Extension Cable
Order #3403 $26.95 (+$4)

KENWOOD

TS-790A

A combination of three high-performance all-mode transceivers rolled into one is the best way to describe the all new Kenwood TS-790A tri-band transceiver. 2 meters and 70 cm are built-in and with the addition of the optional UT-10 (1200 MHz) you have the ultimate in VHF/UHF communications. Power on 2 meters is 45 watts on FM or 35 watts on SSB. Power on 440 is 40 watts FM / 30 watts SSB. The TS-790A is the ideal radio for the serious satellite, moonbounce or grid square DX operator. Requires 12 VDC at 15 Amps.

- All Mode
- Dual Digital VFO's
- Dual Watch
- Scanning
- Band Exchange
- Memory Scroll
- Auto Mode
- Memory Shift
- Auto Rpt. Offset
- Priority Alert
- 59 Memories
- Repeater Reverse
- 500 Hz CW Filter
- RF Power Control
- IF Shift
- Speech Processor

Kenwood TS-790A 144/440 MHz. All Mode.
List $2199.95 *Order #0017* **Please Call**

TM-255A

The TM-255A transceiver delivers superior performance and all-mode operation in a mobile-sized package. Packed with all of the most often needed features such as: auto mode selection, dual digital VFO's, all mode squelch, programmable scanning functions, semi break-in with side tone and much more. This compact lightweight unit is just the ticket for the VHF operator needing a smaller sized rig in the shack or wanting to operate multi-mode mobile or portable. Output: 5 Watts Low / 40 Watts High. With hand-mic.

- All Mode
- Dual Digital VFO's
- Auto Mode
- All Mode Squelch
- Noise Blanker
- Large LCD Display
- Repeater Offset
- Frequency Lock
- 101 Memories
- Semi Break-in CW
- Memory Scan
- Amplifier Control
- Alert Channel
- LCD S-Meter
- 16 Key TT Mic.
- 40 Watts

Kenwood TM-255A 144 MHz. All Mode.
List $1109.95 *Order #1351* **Please Call**

TS-60S

In the tradition of the hugely popular TS-50S, comes the Kenwood TS-60S. This compact high powered transceiver is just right for multi-mode six meter operation. Output is 90 Watts on SSB, CW and FM. 23 watts is available for AM transmit. Many features are available in this compact configuration including 100 memories, CW reverse, full and semi break-in, 3 position RF power control, switchable AGC, all mode squelch, auto power off and CW reverse. The TS-60S uses Kenwood's advanced Direct Digital Synthesizer with fuzzy logic. With hand mic.

- All Mode
- Menu System
- 100 Memories
- Advanced Intercept P.
- Auto Mode
- Large LCD Display
- 20 dB Attenuator
- CW Reverse
- All Mode Squelch
- Full & Semi Break-in
- Auto power off
- 3 Levels of Power
- Switchable AGC
- DDS with Fuzzy Logic
- Multifunction Mic.
- Relay & ATC terminals

Kenwood TS-60S 50-54 Mhz. All Mode.
List $1239.95 *Order #3245* **Please Call**

KENWOOD

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	Shipping	TS-790A	TM-255A	TS-60S
3324	**DFK-7A**	23 Ft. Detachable Front Panel Kit	$99.95	**$89.95**	$4.00		■	
3071	**DFK-4**	13 Ft. Detachable Front Panel Kit	59.95	**51.95**	4.00		■	
0105	**DFK-3**	10 Ft. Detachable Front Panel Kit	26.95	**24.95**	4.00		■	
1105	**IF-232C**	Computer Interface Unit	129.95	**109.95**	4.00	■		
3196	**IF-10D**	Module Interface	89.95	**76.95**	4.00			■
0212	**MB-13**	Mobile Bracket	55.95	**49.95**	4.00		■	■
0230	**MC-43S**	Hand Mic. 8 Pin with Up-Down	59.95	**54.95**	4.00			■
0368	**MC-60A**	Deluxe Desk Mic. 8 Pin with Preamp	159.95	**139.95**	5.00	■		■
1026	**MC-80**	Desk Mic. Pin Gooseneck with Preamp	119.95	**99.95**	5.00	■		■
1539	**MJ-88**	Mic Plug Adapter (Modular to 8-pin)	30.95	**26.95**	4.00		■	
2882	**PG-2N**	DC Power Cable	17.95	**14.95**	3.00		■	
0391	**PG-2Z**	DC Power Cable	37.95	**34.95**	3.00	■		■
0720	**PG-3G**	Filtered DC Power Cable	51.95	**44.95**	4.00		■	
0769	**PG-5A**	TNC Data Cable	15.95	**14.95**	3.00		■	
0694	**SP-31**	External Speaker for TS-790A	99.95	**89.95**	4.00	■		
0890	**SP-41**	External Mobile Speaker	49.95	**44.95**	4.00		■	■
1349	**SP-50B**	External Mobile Speaker	55.95	**48.95**	4.00		■	■
2895	**TSU-5**	Programmable CTCSS Tone Unit	64.95	**54.95**	4.00	■		
2957	**TSU-8**	Programmable CTCSS Tone Unit	59.95	**49.95**	4.00		■	
2982	**VS-2**	Voice Synthesizer	69.95	**59.95**	4.00	■	■	
1957	**YK-107C**	Filter 500 Hz CW	139.95	**124.95**	4.00			■

ICOM

IC-820H

- All Mode
- 116 Memories
- Memory Scan
- Call Channel
- Noise Blanker
- RIT Function
- Dual Digital VFO's
- CW Semi-Break In
- Direct Digital Synth.
- Satellite Functions
- IF Shift Function
- 45W VHF/40W UHF

The IC-820H isn't your typical base station transceiver. This all mode dual bander has compact and lightweight dimensions which offer operating versatility other base stations just can't match. This high performance transceiver with state-of-the-art construction includes a newly designed DDS (direct digital synthesizer) capable of resolving 1 Hz tuning steps for super fine tuning. Satellite operations are easy with the IC-820's built-in satellite functions. Such functions include normal and reverse tracking for different modes of satellite communications and independent uplink/downlink control for Doppler shift compensation. No mic.

Icom 820H 144/440 MHz All Mode
List $1675.00 *Order #3287* **Please Call**

IC-821H

- All Mode
- 160 Memories
- Memory Scan
- Call Channel
- Noise Blanker
- Hand Mic
- Dual Digital VFO's
- Sub Band Receive
- Sub Band Transmit
- Satellite Functions
- IF Shift/RIT on Sub
- 9600 Compatible

The new Icom IC-821H 2M/440 all mode transceiver has just been announced. It was designed from the start for superior satellite and digital communications. Output power is continuously adjustable. Sub Band Receive and Sub Band Transmit are both featured. It is 9600 baud compatible right out of the box. A built-in electronic keyer is also supplied. In the satellite mode, the Sub band is set to transmitter (uplink) frequency and the Main band is set to the receiver (downlink) frequency. In this way, the analog S-meter, IF shift, noise blanker and RIT functions can be used for receiving. This is convenient for fine tuning the transceiver's operation to your needs. The 821H is PACSAT compatible and includes a hand mic.

Icom 821H 144/440 MHz All Mode
List $2095.00 *Order #2558* **Please Call**

ICOM Optional Accessories

Order #	Model	Item Description	List Price	Your Price	Ship.	821H	820H
1848	**AG-25**	144-148 MHz Preamplifier	$176.00	**$159.95**	$4.00	■	■
2771	**CT-17**	CI-V Level Converter	135.00	**119.95**	5.00	■	■
1896	**MB-5**	Mobile Mounting Bracket	47.00	**41.95**	4.00	■	■
1453	**PS-85**	Power Supply 12 VDC 20A	325.00	**269.95**	8.00	■	■
2561	**SM-20**	Desk Microphone	207.00	**179.95**	5.00	■	
0107	**SP-3**	External Speaker	112.00	**99.95**	4.00	■	■
1672	**SP-20**	External Speaker With Filters	248.00	**214.95**	6.00	■	■
3002	**UT-36**	Voice Synthesizer	59.00	**51.95**	3.00		■
3295	**UT-84**	Tone Squelch Unit	88.00	**77.95**	4.00	■	
0213	**UT-50**	Tone Squelch Unit	59.00	**51.95**	3.00		■
3437	**UT-102**	Voice Synthesizer	59.00	**52.95**	3.00	■	

YAESU

FT-736R

- All Mode
- IF Shift
- IF Notch
- CW Filter
- All-Mode VOX
- Call Channel
- Dual VFO's
- 100 Memories
- 10 Duplex Mem.
- Memory Scanning
- Semi Break-in CW
- Built-in Power Supl.
- Two Duplex VFO's
- Auto Rpt. Offset

The Yaesu FT-736R VHF/UHF all-mode transceiver incorporates up to four band modules covering the 50, 144, 220, 430, 440 and 1200 MHz amateur bands. (Supplied with 2M & 440 (25W)). With operating conveniences usually found only on HF transceivers, such as IF shift, IF notch, noise blanker, all mode VOX and three-speed selectable AGC. The memory system includes 100 general purpose memories, ten full duplex cross-band memories and one global call channel, all of which store mode and frequency. One year limited warranty. With hand mic.

Yaesu FT-736R 144/440 MHz. All Mode
List $2449.00 *Order #1123* **Please Call**

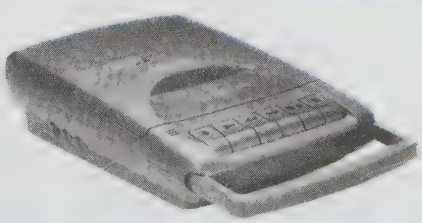
YAESU Optional Accessories

Order #	Model	Item Description	List Price	Your Price	Ship.
1890	**E-736**	DC Power Cable	$ 16.00	**$ 14.95**	$3.00
2204[1]	**FEX-736-50**	50 MHz Band Module	317.00	**299.95**	5.00
2498[1]	**FEX-736-220**	220 MHz Band Module	349.00	**339.95**	5.00
1660[1]	**FEX-736-1.2**	1.2 GHz Band Module	619.00	**589.95**	7.00
0322	**FIF-232C**	CAT Interface Unit For Serial I/O	95.00	**89.95**	4.00
0052	**FTS-8**	37 Tone CTCSS Tone Squelch Unit	62.00	**54.95**	3.00
0276	**FVS-1**	Voice Synthesizer	43.00	**39.95**	4.00
1910	**Keyer B**	Internal Electronic Iambic Keyer	26.00	**24.95**	3.00
0258	**MH-1B8**	Hand Scanning Microphone	39.00	**34.95**	4.00
2932	**SP-767**	External Speaker With Audio Filters	110.00	**99.95**	4.00
0265[1]	**TV-736**	Fast Scan (ATV) Modulator/Demodulator	205.00	**169.95**	4.00
2537[1]	**XF-455MC**	600 Hz CW Narrow Filter	157.00	**144.95**	4.00
0672	**YS-60**	1.8-60 MHz 2KW SWR/Watt Meter	139.00	**124.95**	5.00
0988	**YS-500**	140-525 MHz SWR/Watt Meter	114.00	**99.95**	5.00

■ Universal will install options at no charge at time of purchase. [1](Special order item)

SONY

TCM-929



You are right; this is ***not*** a VHF-UHF transceiver. It is simply a nice compact monaural cassette recorder that we could not fit anywhere else in this catalog. The Sony TCM-929 features a built-in mic, auto shut-off, a pause control, digital counter and cue-review. It operates from a supplied AC adapter or may be operated from four AA cells (not supplied). It is just right for making off-the-air tapes. The mic jack allows direct connection to most receiver's record output jack. Receivers with high a record-out level may require an attenuating patch cord (*#3374* 6' mini to mini $3.69).

Order #0449 **$24.95** (+$6)

KENWOOD TM-742AD

Construct your very own custom triple-band mobile transceiver. Modular construction allows you to add your choice of a 28, 50, 220 or 1200 MHz band. This deluxe radio comes standard with 144 and 440 MHz. The improved detachable front panel allows the radio to be mounted elsewhere in your vehicle (with optional DFK-3/4/7). This newest "D" version features the MC-53DM backlit mic.

- 100 Memories
- Scanning
- CTCSS Encode
- Date/Time Disp.
- Auto Power Off
- Cross Band Repeat
- DTMF Memory
- Auto Rpt. Offset - 2 Mtr
- DTSS Pager Function
- Backlit MC-53DM mic.

Kenwood TM-742AD Multi-band. 50/35/__ watts
List $959.95 *Order #0912* **Please Call**

TM-V7A

The new look in high-performance mobile communications is here. The distinctive TM-V7A has an easy to operate control panel and a cool-blue reversible LCD. There is a lot more inside including the five-in-one programmable memory, DTSS and pager functions, 280 memory channels plus the ability to receive two frequencies on the same band. Other advanced features include: S-meter squelch, time-out timer, dimmer, auto power-off and supplied MC-53DM backlit DTMF mic.

- 280 Memories
- Dual Display
- DTMF Hand Mic
- Auto Rep. Offset
- Guide Function
- Dimmer
- Reversible LCD
- Visual Scan
- Dual Rx on same band
- Auto Simplex Checker
- DTSS Selective Call
- PL Decode/Encode.
- Packet 1200/9600 Din
- Hi/Med/Lo RF Out

Kenwood TM-V7A 144/440 MHz 50/35W
List $739.95 *Order #3565* **Please Call**

TM-261A
TM-461A

Mobile communications just got easier thanks to Kenwood's new TM-261A and TM-461A single banders. Both are fully equipped, sturdily built and supremely user-friendly. The TM-261A and TM-461A put out 50 and 35 watts respectively. Both models also have mid and low power settings. All 61 memory channels can be identified alphanumerically. The TM-261A includes airband receive, autopower off and auto repeater offset.

- 61 Memories
- Multi Scanning
- DTMF Memory
- Mil-Std 810C/D
- DTSS Selective Call
- CTCSS Tone Encode

Kenwood TM-261A 144 MHz. 50 watts
List $429.95 *Order #2164* **Please Call**

Kenwood TM-461A 440 MHz. 35 watts
List $509.95 *Order #1397* **Please Cal**

TM-251A

The TM-251A series includes dual-band receive and packet compatibility for 1200 or 9600 bps accessible from the rear panel. There are 40 memory channels plus 1 call channel and all can be used to store transmit and receive frequencies as well as repeater and signaling data. The built-in digital recording system enables automatic storing of a signal picked up by the radio for later playback. Three output power levels are provided at 5/10/50W (VHF). All Kenwood amateur products carry a 1 year limited warranty.

- 40 Memories
- Scanning
- CTCSS Built-in
- Auto Rpt. Offset
- Time-out Timer
- S-Meter Squelch
- DTMF Hand Mic
- 5-step Dimmer Control
- Call Channel
- Auto Rpt. Offset
- 10 DTMF Memories
- Auto-Power Off
- Dual-Menu System
- Packet 1200/9600 Din

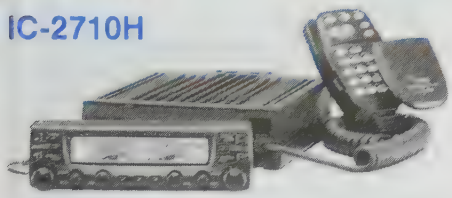
Kenwood TM-251A 144 MHz. 50 watts
List $529.95 *Order #0000* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	Shipping	TM-742A	TM-V7A	TM-261A TM-461A	TM-251A
0105	**DFK-3**	9 Ft. Remote Kit (1 cable: head)	$26.95	**$22.95**	$4.00	■			
3071	**DFK-4**	13 Ft. Remote Kit (2 cbls: head/mic)	59.95	**51.95**	4.00	■			
3033	**DFK-7**	22 Ft. Remote Kit (4 cbls: head/mic/tri-audio/DC)	89.95	**79.95**	4.00	■			
1658	**DFK-3C**	9 Ft. Remote Kit (1 cable: head)	44.95	**41.95**	4.00		■		
2215	**DFK-4C**	13 Ft. Quick Release Detachable Front Panel Kit	64.95	**59.95**	4.00		■		
2432	**DFK-7C**	23 Ft. Quick Release Detachable Front Panel Kit	99.95	**89.95**	4.00		■		
0214	**MB-201**	Mobile Mount	25.95	**22.95**	3.00		■	■	■
3027	**MC-53DM**	Illuminated Hand Mic With DTMF. Modular	79.95	**69.95**	3.00		■		■
0368	**MC-60A**	Deluxe Desk Mic. 8 Pin With Preamp	159.95	**139.95**	5.00	■	■		
1026	**MC-80**	Desk Mic. Pin Gooseneck With Preamp	119.95	**99.95**	5.00	■	■	■	
1539	**MJ-88**	Mic Plug Adapter (Modular to 8-pin)	30.95	**26.95**	4.00	■		■	■
0272	**MJ-89**	Modular Mic Switch	69.95	**64.95**	3.00		■	■	
2882	**PG-2N**	DC Power Cable	17.95	**14.95**	3.00	■		■	■
0303	**PG-3B**	DC Line Noise Filter	29.95	**26.95**	3.00	■	■	■	■
0720	**PG-3G**	DC Line Noise Filter	51.95	**44.95**	4.00		■	■	■
0769	**PG-5A**	TNC Data Cable	15.95	**14.95**	3.00		■		■
0890	**SP-41**	Compact Mobile Speaker	49.95	**44.95**	4.00	■	■	■	■
1349	**SP-50B**	Mobile Speaker	55.95	**48.95**	4.00	■	■	■	■
1796	**TSU-7**	Programmable CTCSS Tone Unit	59.95	**49.95**	3.00	■			
2957	**TSU-8**	Programmable CTCSS Tone Unit	59.95	**49.95**	4.00			■	■
1669	**UT-28S**	Module 28 MHz 50 Watts (Rx: 24-36 MHz)	339.95	**299.95**	6.00	■			
1609	**UT-50S**	Module 50 MHz 50 Watts (Rx: 46-57 MHz)	379.95	**339.95**	7.00	■			
2270	**UT-220S**	Module 220 MHz 25 Watts (Rx: 215-230 MHz)	379.95	**339.95**	7.00	■			
2702	**VS-3**	Voice Synthesizer	39.95	**36.95**	3.00		■		

ICOM

IC-2710H

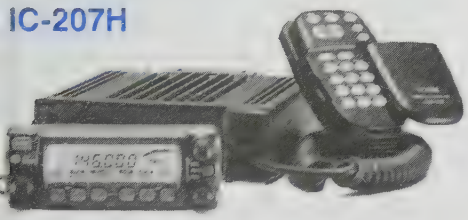


The IC-2710H comes with the advanced HM-98 DTMF mic for complete control. The front panel is detachable with the optional OPC-600 or 601 separation cable. Independent tuning, volume and squelch knobs are featured. Independent VHF and UHF circuits are designed for both the left and right displays so V/V and U/U combinations are possible without sensitivity loss.

- Cross Band Rep.
- 220 Memories
- Built-In Duplexer
- Code Squelch
- Time-Out Timer
- Three Output Levels
- Auto Repeater Func.
- Pager Function
- PC Programmable
- Backlit Hand Mic

Icom IC-2710H 144 & 440 MHz 50/35 watt
List $876.00 *Order #3188* **Please Call**

IC-207H

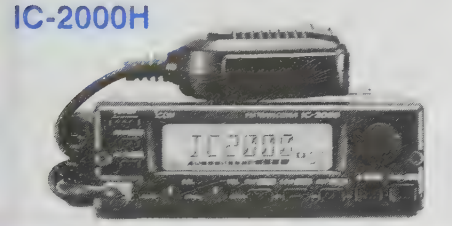


The new IC-207H 2M/440 dual bander is priced like a single bander, but it still has all the features you want. You get: detachable front panel, wideband receive, 45/35 watts, 4 power settings, built-in CTCSS decode/encode, PC compatibility and 162 memory channels. It is 9600 BPS packet ready too (6 pin DIN). The 207H also features a built-in duplexer and the full function HM-98 mic.

- Encode/Decode
- 9600 Ready
- 162 Memories
- Duplexer
- Tone Encode
- Simultaneous Receive
- Four Output Levels
- Detachable Head
- Rx 118-174 MHz
- Full Function Mic

Icom IC-207H 144 & 440 MHz 50/35 watts
List *Order #1610* **Please Call**

IC-2000H



The Icom IC-2000H 2 meter FM mobile features a rugged design and an easy-to-read display. The receiver covers 118-174 MHz and the transmitter delivers 5, 10 or 50 watts of output power. Other features include 60 regular memories, 2 scratch pad memories, alpha-numeric notes, remote microphone capabilities (UT-101 required) and tone scan (UT-85 required).

- 60 Memories
- Scanning
- Call Channel
- DTMF Mic.
- Tone Scan
- Large LCD Display
- Extend Receive
- Three Output Levels
- Remote Control Mic
- CTCSS Encode

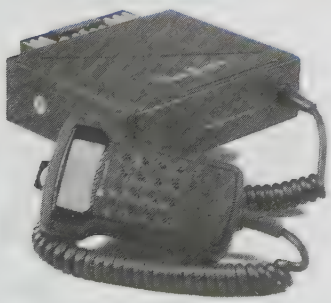
Icom IC-2000H 144-148 MHz. 50 watt
List $334.00 *Order #1995* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	2710	2350	207	2000
3292	**HM-90A**	Wireless Microphone	$167.00	**$147.95** (+$4)	■		■	
3167	**EX-1759**	Infrared Rx for HM-90A	88.00	**79.95** (+$4)	■		■	
2145	**MB-17A**	Mobile Bracket	39.00	**34.95** (+$3)	■	■	■	
0382	**OPC-346**	DC Cord 9 Ft.	22.00	**19.95** (+$3)		■	■	■
3236	**OPC-347**	DC Cord 23 Ft.	37.00	**32.95** (+$4)	■	■	■	■
2329	**OPC-600**	Separation Cable 11.5 Ft.	36.00	**32.95** (+$4)	■			
0595	**OPC-601**	Separation Cable 23.0 Ft.	48.00	**44.95** (+$4)	■			
0172	**SP-7**	External Speaker	75.00	**64.95** (+$5)	■	■		
1866	**SP-10**	Mobile Speaker	55.00	**47.95** (+$4)	■	■	■	
1423	**UT-55**	DTMF Encoder/Decoder	55.00	**47.95** (+$3)				
2985	**UT-49**	DTMF Decoder Unit	59.00	**51.95** (+$3)	■			
2482	**UT-85**	Tone Squelch Unit	61.00	**52.95** (+$3)				■
0985	**UT-89**	Tone Squelch Unit	88.00	**77.95** (+$3)		■		
0306	**UT-104**	Tone Squelch Unit	64.00	**58.95** (+$3)	■			

STANDARD

C5718DA



- Full Duplex
- Coded Squelch
- Paging
- 40 Memories
- Scanning
- Built-In Duplexer
- CTCSS Enc/Dec
- Backlit Keypad/Display
- Remote Microphone
- Extend Receive

This Twin-Band 2M/440 mobile transceiver from Standard offers the ultimate in operating and installation convenience. The C5718DA may be operated from the optional front panel controls or mounted out of the way and be completely controlled from its microphone. Dual display shows both bands simultaneously as well as memory information and signal strength. Dual frequency receive allows two VHF, two UHF for VHF/UHF. It is designed with Packet in mind and is 9600 baud capable out of the box. Out put is 50 watts on 2M and 40 watts on 440 MHz.

Standard C5718DA Dual Band 144 & 440 MHz.
List $849.00 *Order #0439* **Please Call**

STANDARD

C1208DA

- LCD Display
- Code Squelch
- Paging
- 100 Memories
- Scanning
- 440 MHz Receive
- Tone Squelch
- Backlit Amber LCD
- Remote Microphone
- Tone Burst

This 2m mobile from Standard offers the ultimate in operating and installation convenience. The C1208DA is completely controlled from its microphone. Features include: 100 memories, 440 receive, coded squelch, paging and three RF output power levels. One year limited warranty.
Standard C1208DA 144-148 MHz. 50watt 440RX
List $549.00 *Order #0317* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	C1208DA	C5718
2359	**CAW-562**	Mic Extension Cable 12'	$48.00	**$38.95** (+$3)	■	
3233	**CAW-570**	Split Mic Cable	63.00	**54.95** (+$3)		■
2086	**CMU-182**	200 Memory Channel Unit	48.00	**39.95** (+$3)		■
0068	**CRC-5700**	Removable Control Head	239.00	**199.95** (+$5)		■

ALINCO

DR-610T

- 120 Memories
- CTCSS Encoder
- DSQ
- TOT and APO
- Bell Function
- Airband Receive
- Cross Band Repeat
- 5 Channel Auto Dialer
- Remote Front Panel
- 9600 bps I/O Jack

The DR-610T dual-band FM transceiver (144/440 MHz.) combines a "Hi-Tech" rugged design with exceptional user friendliness. The front panel can be separated from the main body for custom installation. Full duplex cross-band operation and cross-band repeater function are standard. Two VFOs, 120 memories plus split channel, call channel and program scan mem. Plus aircraft receive.

Alinco DR-610T 144 & 440 MHz. 50/35 watts
List $674.00 *Order #0034* **Please Call**

DR-150T

- 100 Memories
- LITZ Capable
- Memory Skip
- Odd Offsets
- DSQ Functions
- 440 Receive
- Aircraft Receive
- Channel Scope
- Time Out Timer
- DTMF Microphone

The DR-150T is loaded! Full 50 watts out on 2M plus 440 and aircraft receive. The channel scope display functions in both VFO and memory mode. Two VFOs and 100 memories are featured. Comes standard with 50 CTCSS tone encoder, 9600 bps/phone patch interface jack. The DTMF mic also permits direct frequency entry. Optional CTCSS decode is available via *#1381* EJ-20U.

Alinco DR-150T 144-148 MHz. 50 watts
List $315.00 *Order #3185* **Please Call**

DR-M06T

- 100 Memories
- VFO Scanning
- Odd Offsets
- Reverse Key
- Encoder
- Large LCD Display
- Memory Scanning
- Time Out Timer
- DTMF Microphone
- Six Tuning Steps

The Alinco DR-M06T is engineered for 6 meter FM at 1W or 10W output. The dimensions and features are similar to the DR-130T. Frequency range covers 50-54 MHz., 100 memory channels are available to store independent offsets for odd split frequencies and CTCSS encode with 50 tones is standard. Comes with the EMS-11 DTMF hand microphone.

Alinco DR-M06T 50-54 MHz. 10 watts
List $338.00 *Order #2773* **Please Call**

DR-605T

Alinco's newest 2M/440 FM mobile rig is quickly becoming a winner. 100 Memories, true 9600 packet port, built in CTCSS Encode, cross-band repeat, internal antenna duplexer and more. All at a price that will surprise you.

Alinco DR-605T 144 & 440 MHz. 50/35 watts
List $512.00 *Order #0128* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	150T	600T	610T	M06T
2469	**EDC-19**	Remote Cable 9 Ft.	$40.00	**$36.95** (+$3)		■		
2891	**EDC-20**	Remote Cable 16 Ft.	46.00	**39.95** (+$3)		■		
3419	**EDS-2**	Remote Cable 9 Ft.	23.00	**21.95** (+$3)			■	
3420	**EDS-3**	Remote Cable 16 Ft.	39.00	**34.95** (+$3)			■	
1381	**EJ-20U**	CTCSS Decode	41.00	**38.95** (+$3)	■			■
3422	**EJ-23U**	Additional 120 Memories	35.00	**31.95** (+$3)			■	
3423	**EJ-24U**	CTCSS Decode	85.00	**74.95** (+$3)			■	

YAESU

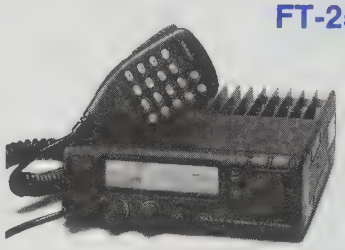
FT-3000M

- 81 Memories
- DCS
- ARTS
- Odd Offsets
- MIL-STD 810
- Memory Scanning
- RF Levels: 10,25,50,70
- Smart-Search

The FT-3000M is the only amateur 2M FM mobile with 70 full watts of power. Other highlights 81 memories, twin cooling fans, menu programming, 4 power levels. Wideband receive covers 110-180, 300-520 and 800-900 (less cellular). The sub receiver allows split and full-duplex cross band.

Yaesu FT-3000M 144-148 MHz. 70 watts
List $589.00 *Order #0300* **Please Call**

FT-2500M

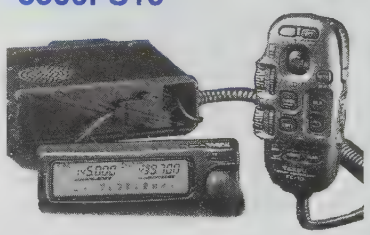


- 31 Memories
- Scanning
- LCD Display
- DTMF Calling
- CTCSS Encode
- Backlit DTMF Mic.
- 3 Power Levels 5,25,50
- Mil-Std. 810D Rating

This rugged "mil-spec" 2 meter mobile transceiver features the largest LCD display readout available. The selectable alpha-numeric display allows you to store frequencies, call signs or names in its 31 tunable memories. Also features: backlit DTMF microphone and CTCSS encode built-in.

Yaesu FT-2500M 144-148 MHz 50 watts
List $459.00 *Order #3307* **Please Call**

FT-8500FS10



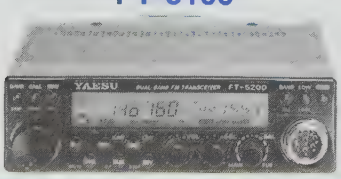
- 110 Memories
- FS-10 smart mic
- MIL-STD 810/C
- Aircraft Receive
- Alpha-Numeric Display
- Spectrum Analyzer
- 3 Power Levels
- V+V, U+U, V+U Rx.

Every feature of this dual-bander can be controlled by the supplied, all-in-one, FS10 *smart mic*; even volume and squelch. Other features include: alpha-numeric display on both bands, extended receive with air, spectrum display, 9600 bps ready, digital voltage display and auto mute.

Yaesu FT-8500FS10 (with Smart mic as shown)
List $859.00 *Order #2900* **Please Call**

Yaesu FT-8500MH39 (with regular hand mic)
List $809.00 *Order #3017* **Please Call**

FT-5100



- 32 Memories
- Scanning
- Dual LCD
- Dual Receive
- Built-in Duplexer
- DTMF Mic.
- CTCSS Encode
- Call Channels

Yaesu FT-5100 144 & 440 MHz. 50/35 watts
List $799.00 *Order #1103* **Please Call**

FT-8000R

Contact Universal for further details and pricing on this new dual band mobile transceiver.

Yaesu FT-8000R 144 & 440 MHz. 50/35 watts
List $699.00 *Order #0113* **Please Call**

KENWOOD

TH-79AD/ADH

- LCD Dot Matrix Display
- 82 Memories (2 Call)
- Alphanumeric Memory
- Message Paging
- Menu System
- Auto Dial
- Double Band Scan
- Dual Freq. Receive

The TH-79A/D features an alpha-numeric dot matrix display which can be entered into memory allowing you to name repeaters instead of actual frequencies. The unique guide function provides simple operating instructions that appear in the display at a touch of a button. Dual frequency receive functions include full duplex cross-band operation and the ability to receive two frequencies on the same band (V/V or U/U). CTCSS tone encode and decode are standard. Includes auto power off, 3 output power levels, battery save function and non-volatile memory system.

Kenwood TH-79AD 144 & 440 MHz.
List $629.95 *Order #1823* **Please Call**

Kenwood TH-79ADH 144 & 440 MHz. **5W**
List $649.95 *Order #0452* **Please Call**

TH-235A

- LCD Display
- 60 Memories
- DTSS Selective Calling
- Message Paging
- Call Channel
- CTCSS Encode
- 10 DTMF Memories
- Multi Scan Function

The easy-to-use and inexpensive Kenwood TH-235A is full of features. Sixty nonvolatile memories can independently store transmit and receive frequencies. Repeater reverse and auto-repeater offset are provided. CTCSS encode is built-in. (Decode is via optional TSU-8). Auto-power-off and auto-battery-save functions conserve battery life. Keypad entry and backlit display add to the convenience of this HT. Extended receive covers 136-174 MHz. Output power is 1.5W with the supplied PB-36 (5W with optional PB-37). The TH-235A includes PB-36 NiCad, wall charger and antenna. All Kenwood amateur products carry a 1 year limited warranty.

Kenwood TH-235A 144 MHz.
List $229.95 *Order #0596* **Please Call**

TH-22AT
TH-42AT

- 40 Memories
- Dual Scan CO/TO
- Priority Channel
- Multi Scanning Modes
- Built-in CTCSS encode
- Easy to use Menu
- Battery Saver Circuit
- Frequency Lock

Meet the latest in palm-size transceiver technology. The TH-22AT and 42AT will fit in your shirt pocket yet deliver impressive performance thanks to the MOS FET power module. Features include DTMF keypad, easy-to-use menu systems, multiple scan functions and 40 memories. Three power levels are supported (3W, 1/2 W or 30 mw) with the standard battery (5W with optional battery). Includes auto battery-saver and auto power off functions. Built in CTCSS encoder and optional decoder. Easy-to-read backlit display. The TH-22AT extended receive covers 136-173.995 MHz.

Kenwood TH-22AT 144 MHz.
List $339.95 *Order #1936* **Please Call**

Kenwood TH-42AT 440 MHz.
List $399.95 *Order #2079* **Please Call**

KENWOOD

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	Shipping	TH-79A	TH-28A TH-48A	TH-22AT TH-42AT	TH-235A
1212	**BC-15A**	Rapid Charger For PB-13 and PB-14	$119.95	**$99.95**	(+$4)		■		
0862	**BT- 8**	Battery Case For Six Alkaline AA Cells	29.95	**24.95**	(+$3)		■		
3212	**BT- 9**	Battery Case For Four Alkaline AA Cells	29.95	**24.95**	(+$3)	■		■	
0796	**BT-10**	Battery Case For Six Alkaline AA Cells	13.95	**12.95**	(+$3)				■
1474	**EMC-1**	Clip Microphone with Earphone	43.95	**36.95**	(+$3)	■	■		
1061	**HMC-3**	Boom Headset with VOX/PTT	72.95	**64.95**	(+$3)	■	■	■	■
0148	**KSC-8A**	Desk Charger	26.95	**24.95**	(+$3)				■
3211	**KSC-14**	Rapid Desk Charger	87.95	**74.95**	(+$3)	■		■	■
1868	**ME-1**	Memory Expansion Unit	39.95	**34.95**	(+$3)		■		
2023	**PB-14**	Battery 12VDC 300 mAh	90.95	**79.95**	(+$4)		▲		
0894	**PB-17**	Battery 12VDC 700 mAh	99.95	**89.95**	(+$3)		■		
0116	**PB-18**	Battery 7.2VDC 1100 mAh	89.95	**79.95**	(+$3)		■		
3208	**PB-32**	Battery 6VDC 600 mAh	66.95	**59.95**	(+$3)	■		■	
3209	**PB-33**	Battery 6VDC 1200 mAh	89.95	**79.95**	(+$3)	■		■	
3210	**PB-34**	Battery 9.6VDC 600 mAh	89.95	**79.95**	(+$3)	■		■	
2621	**PB-36**	Battery 7.2VDC 950 mAh	42.95	**39.95**	(+$3)				■
1128	**PB-37**	Battery 12VDC 950 mAh	57.95	**52.95**	(+$3)				■
1798	**PG-2W**	DC Cable	17.95	**15.95**	(+$3)	■	■	■	■
1280	**PG-3J**	Filtered Cigar Lighter Cord	36.95	**31.95**	(+$3)	■	■	■	
3013	**SC-33**	Soft Case For TH-28 with PB-13/14	24.95	**20.95**	(+$3)		■		
0946	**SC-34**	Soft Case For TH-28 with PB-17/18	24.95	**20.95**	(+$3)		■		
0802	**SC-37**	Soft Case For TH-22 with PB-30/32	24.95	**20.95**	(+$3)			■	
2840	**SC-39**	Soft Case For TH-22 with PB-33/34	24.95	**20.95**	(+$3)			■	
2836	**SC-41**	Soft Case For TH-79 with PB-32	24.95	**20.95**	(+$3)	■			
2191	**SC-43**	Soft Case For TH-79 with PB-33/34	24.95	**20.95**	(+$3)	■			
3061	**SMC-31**	Speaker Microphone with 90 Plug	59.95	**54.95**	(+$4)	■	■	■	
2459	**SMC-32**	Mini Speaker Microphone	52.95	**46.95**	(+$4)	■	■	■	■
2737	**SMC-33**	Speaker Microphone with Remote functions	65.95	**57.95**	(+$4)	■	■	■	■
1172	**SMC-34**	Speaker Mic with Remote functions & volume	67.95	**59.95**	(+$4)	■	■	■	■
2957	**TSU-8**	Tone Decoder	59.95	**49.95**	(+$4)			■	■

▲ = Color and design do not match.

Note: Accessories enjoy **FREE** shipping when purchased with the radio.

IC-T7A

- Band & Mem Scan
- Extended Receive
- Two RF Levels
- Auto Repeater
- DTMF Keypad
- Battery Saver
- DTMF Memories
- Simple Operation
- PC Programmable

The Icom T7A is a dual band HT sized and priced like a single band radio. Only 2.25" x 4.82 x 1.125 it fits in the palm of your hand. The T7A features a streamlined function set. A separate CTCSS tone encoder and CTCSS tone encoder/decoder are standard. Up to 4W output on 2M is available with optional BP-173 battery. Full/programmable band scans and all/band select memory scans provide versatile signal searching. Other refinements include backlit LCD, auto power off, auto repeater function and tone scan. A flexible antenna, belt clip, wrist strap, BP-180 battery pack and battery charger are all included. All Icom amateur products carry a one year limited warranty.

Icom IC-T7A Dual Band HT 144 & 440 MHz.
List $370.00 *Order #1227* **Please Call**

IC-T22A

- 40 Alpha Memories
- Extended Receive
- Two RF Levels
- Auto Repeater
- DTMF Keypad
- Battery Saver
- DTMF Memories
- Simple Operation
- CTCSS Decode

This new shirt pocket small, ultra-slim 2M HT offers big crisp audio. It puts out a full 5 watts of power when supplied with 13.5 VDC. It features 40 alphanumeric memory channels with an *auto log-in* feature. The memories are stored in an EEPROM for safe memory management. Includes CTCSS encode, five DTMF memories, and alpha paging. Includes: antenna, battery pack and battery charger. The T22A uses Icom's latest technology and looks great. A flexible antenna, belt clip, wrist strap, BP-180 battery pack and battery charger are all included. All Icom amateur products carry a one year limited warranty.

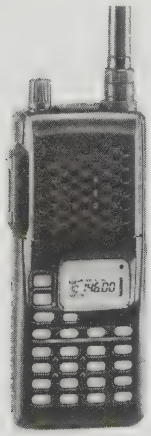
Icom IC-T22A 144 MHz. HT
List $283.00 *Order #3400* **Please Call**

IC-W32A

- 200 Alpha Memories
- Extended Receive
- Three RF Levels
- Auto Repeater
- DTMF Keypad
- Battery Saver
- DTMF Memories
- CTCSS Encode
- PC Programmable

The Icom W32A dual bander has alphanumeric and memory display. Independent tuning knobs and backlit display and keypad are also featured. The transceiver's two dials are used for independent tuning of the VHF and UHF band. Other features include: impressive audio, 50 frequency PL encode, V/V, U/U or V/U main/sub band operation (no decrease in sensitivity), full crossband duplex operation and 3 power levels. The W32A comes with: flexible antenna, belt clip, wrist strap, BP-173 battery pack and battery charger. This handheld lives up to the phrase that "Good things come in small packages".

Icom IC-W32A Dual Band HT 144 & 440 MHz.
List $495.00 *Order #0838* **Please Call**



IC-T2A

- Band & Mem Scan
- Extended Receive
- Power Save Function
- Auto Repeater
- DTMF Keypad
- Battery Saver
- 40 Memories
- Simple Operation
- PC Programmable
- Encode & Decode
- 4.5W Output Standard

The Icom T2A is a single band, easy to use, 2 meter H.T. designed for everyone's budget. Innovative features such as cloning capability and a guide function are housed in a no-nonsense solid body. Tone squelch operation (encode and decode) is standard for quiet standby. Pocket beep provides a method of keeping track of calls even when you are away from the transceiver. Tone scan allows you to detect subaudible tone frequencies such as those used to open a repeater. Eight front panel keys may be customized allowing you to assign their function to your operating style. Five DTMF memory channels store up to 32 digits each. A full 4.5 watts of power will hit those distant repeaters. Includes BP-194 battery case, 8 AA NiCads, wall charger and antenna.

Icom IC-T2A 144 MHz. HT
List $227.00 *Order #0790* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	W32A	Z1A	T2A	T7A	T22A
0389	**AD-81**	Battery Pack Adapter For BC-119	$17.00	**$15.95** (+$3)			■		
0196	**AD-51**	Battery Pack Adapter For BC-79	11.00	**9.95** (+$3)	■	■			
2294	**AD-56**	Battery Pack Adapter For BC-79	14.00	**12.95** (+$3)				■	■
2311	**BC-119**	Desktop Quick Charger	82.00	**74.95** (+$5)	■	■	■	■	■
0584	**BP-170**	Battery Case For Four AA Cells	28.00	**24.95** (+$3)	■	■		■	■
0381	**BP-171**	Battery Pack 4.8VDC 700 mAh	66.00	**57.95** (+$3)	■	■		■	■
0326	**BP-172**	Battery Pack 4.8VDC 950 mAh	73.00	**64.95** (+$3)	■	■		■	■
0847	**BP-173**	Battery Pack 9.6VDC 600 mAh	120.00	**104.95** (+$3)	■	■		■	■
0519	**BP-194**	Battery Case For Four AA Cells	18.95	**16.95** (+$3)			■		
0578	**BP-195**	Battery Pack 9.6VDC 700 mAh	42.00	**34.95** (+$3)			■		
0556	**BP-196**	Battery Pack 9.6VDC 1050 mAh	53.00	**44.95** (+$3)			■		
3151	**BP-180**	Battery Pack 7.2VDC 600 mAh	66.00	**57.95** (+$3)	■			■	■
0571	**CP-12**	Cigar Lighter Cable With Filter	29.00	**27.95** (+$3)	■	■	■	■	■
3150	**CP-12L**	Cigar Lighter Cable With Filter	29.00	**27.95** (+$3)	■	■	■	■	■
0426	**CS-T2**	Cloning Software	30.00	**25.95** (+$3)			■		
1165	**HM-46**	Mini Speaker Mic	55.00	**47.95** (+$3)	■	■	■	■	■
0969	**HM-54**	Heavy Duty Speaker Mic	66.00	**58.95** (+$3)	■	■	■	■	■
3429	**HM-75A**	Speaker Mic with Remote	77.00	**67.95** (+$3)	■	■	■	■	■
2178	**HS-51**	Boom Headset Vox/PTT	77.00	**67.95** (+$3)			■		
0893	**HS-85**	Boom Headset Vox/PTT	84.00	**74.95** (+$3)	■	■		■	■
1622	**LC-123**	Case For BP-170/171/172	30.00	**26.95** (+$3)	■	■			
1935	**LC-124**	Case For BP-173	30.00	**26.95** (+$3)	■	■			
3149	**LC-125**	Case For BP-170/171/172	30.00	**26.95** (+$3)					■
2809	**LC-128**	Case For Any W31A Battery	30.00	**26.95** (+$3)	■				
1171	**LC-136**	Case For BP-170/171/172	30.00	**26.95** (+$3)				■	
1095	**LC-137**	Case For BP-173/180	30.00	**26.95** (+$3)				■	
0221	**LC-145**	Case For T2A	38.00	**27.95** (+$3)			■		
1516	**MB-30**	Mobile Mounting Bracket	32.00	**28.95** (+$3)	■	■	■	■	■
2731	**OPC-254**	Mini DC Power Cable	11.00	**10.95** (+$2)	■	■	■	■	
1666	**OPC-254L**	Mini DC Angle Power Cable	11.00	**10.95** (+$2)	■	■	■	■	■
2676	**UT-93**	Tone Squelch Unit	66.00	**59.95** (+$3)		■			
3440	**UT-94**	Tone Squelch Unit	44.00	**39.95** (+$3)	■				■

STANDARD

C508A

- LCD Display
- 60 Memories
- Wide Band Receive
- Battery Saver
- Keyboard lock
- Scanning
- CTCSS Enc/Dec
- Auto Power Off

Finaly, dual band 2M/440 HT that fits in your shirt pocket! It is big on features, if small on size. 60 programmable memories, 39 encode-decode CTCSS tones and good intermod rejection make this little wonder a winner. Battery consumption is kept in check with a four-step battery saver and auto-power off circuit. The 280 mW output works well in most urban areas served with repeaters. It is easy to program via 22 menus and has three types of scanning: Busy, Pause or Hold. Receive range is approximately: 100-180, 340-400 and 400-480 MHz. An incredible 2.28" x 3.35" x 1"D. 5.65 oz. Requires two AA cells not supplied.

Standard C508A Dual Band HT 144 & 440 MHz.
List $345.00 *Order #2646* **Please Call**

C178A

- LCD Display
- 40 Memories
- Wide Band Receive
- CTCSS Enc/Dec
- DTMF Keypad
- Scanning
- Call Channel
- Dual Watch

The new C178A is an ultra-compact handheld that is versatile enough to satisfy your every need. Each of the 40 non-volatile memories can be loaded with repeater shift, paging mode, code squelch mode, tone squelch mode and encode-decode tone. An optional 200 channel memory EPROM is also available. The extended receive range allows reception from 110-174 MHz. Scanning features include: scan-busy, pause and hold. DTMF paging and coded squelch come standard. RF output is selectable between 50 mW, .35W and 2.5W. A full 5W is available at 12VDC.

Standard C178A 144 MHz.
List $459.00 *Order #3224* **Please Call**

C558A

- LCD Display
- 40 Memories
- Twin Band Scanning
- Cross Band Operation
- DTMF Paging
- AM Receive
- Call Channel
- Dual Watch

This super-compact twin bander features clone mode, DTMF paging, code squelch, cross-band repeater operation, seven tuning steps, auto-power off and a built-in AM detector. Simultaneous reception is possible on both VHF and UHF bands. Audio mute automatically turns off the sub-band audio while transmitting on the main band. Ten DTMF sequences of up to 15 digits can be stored. 40 memory channels are stored on a non-volatile removable 4K EE-Prom and the optional 16K EE-Prom can provide 200 channels. CTCSS encode/decode is possible with optional CTN-160. Three RF output levels possible with a full 5W at 12VDC.

Standard C558A Dual Band HT 144 & 440 MHz.
List $665.00 *Order #0321* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	C158A	C178	C558A	C108	C508
1323	**CAW150**	Cigar Lighter Cord	$18.00	**$14.95** (+$2)	■	■	■		
2257	**CAW151**	DC Power Cable	14.50	**11.95** (+$2)	■	■	■		
0067	**CAW152**	Cigar Lighter Cord with Filter	30.50	**24.95** (+$3)		■			
2879	**CAX02**	Bottom Cover	12.50	**10.95** (+$2)	■		■		
1336	**CAX03**	Bottom Cover	12.50	**10.95** (+$2)		■			
2729	**CBT151**	Battery Case (6 x AA)	22.00	**18.95** (+$2)	■				
1623	**CBT151GY**	Battery Case (6 x AA)	22.00	**18.95** (+$2)			■		
3279	**CBT171**	Battery Case (6 x AA)	21.00	**18.95** (+$2)		■			
3280	**CBT175**	Battery Case (2x AA)	17.00	**14.95** (+$2)		■			
0789	**CHP111**	Headset Mic with PTT	48.00	**38.95** (+$3)	■	■	■	■	■
3351	**CHP150**	Headset with Vox	87.50	**74.95** (+$3)	■	■	■	■	■
0819	**CLC151**	Case For C158 with CNB-151	25.00	**20.95** (+$2)	■				
0392	**CLC152**	Case For C158 with CNB-152	26.00	**21.95** (+$2)	■				
3276	**CLC171**	Case For C178 with CNB-171	30.00	**26.95** (+$2)		■			
3277	**CLC172**	Case For C178 with CNB-172	30.00	**26.95** (+$2)		■			
3206	**CLC401**	Case For C108 Standard	16.00	**13.95** (+$2)				■	
3275	**CLC402**	Case For C108 Deluxe	23.00	**19.95** (+$2)				■	
3010	**CLC550**	Case For C558 with CNB-151	29.00	**23.95** (+$2)			■		
3082	**CLC551**	Case For C558 with CNB-152	31.00	**26.95** (+$2)			■		
0999	**CMC150**	Mobile Charger	28.00	**23.95** (+$2)	■	■	■		
2962	**CMP111**	Speaker Mic	58.00	**48.95** (+$3)	■	■	■	■	■
0737	**CMP113**	Tie-pin Speaker Mic	48.00	**39.95** (+$3)	■	■	■	■	■
2658	**CMP115**	Speaker Mic Small	53.00	**44.95** (+$3)	■	■	■	■	■
0262	**CMU161**	Memory 200 Channel	48.00	**39.95** (+$3)		■	■		
0227	**CNB151**	Battery 7 VDC 700 mAh	82.00	**69.95** (+$3)	■				
0195	**CNB152**	Battery 12 VDC 600 mAh	99.00	**89.95** (+$3)	■		■		
0185	**CNB153**	Battery 7 VDC 1000 mAh	99.00	**89.95** (+$3)	■		■		
3281	**CNB171**	Battery 7 VDC 700 mAh	80.00	**66.95** (+$3)		■			
3283	**CNB172**	Battery 12 VDC 600 mAh	127.00	**104.95** (+$3)		■			
3282	**CNB173**	Battery 7 VDC 1100 mAh	99.00	**89.95** (+$3)		■			
3284	**CNB401**	NiCad Pack for C108/508	22.00	**18.95** (+$3)				■	■
1417	**CSA181A**	Rapid Desk Charger	128.00	**99.95** (+$5)	■	■	■		
3285	**CSA401A**	Nicad Pack Charger	48.00	**39.95** (+$3)				■	■

C188A
C488A

These lean and light HT's feature 40 memories, call channel, sub VFO, auto power off, battery save, wake-up mode and various scan modes. Supplied with battery, charger, hand strap, and belt clip.

Standard C188A 144 MHz.
List $395.00 *Order #3138* **Please Call**
Standard C488A 440 MHz.
List $529.00 *Order #2387* **Please Call**

C108A

Here's the tiniest handheld in hamdom. Features include: 100-174 MHz receive (AM or FM detection), twenty memories, four scan modes and 200 mW of transmit power. Also includes: dial lamp, keypad lock, battery save and auto power off. Only 2.3" x 3.2" x 1" and weighs 5 ounces. CTCSS is standard. Powered by two AA cells not supplied.

Standard C108A 144 MHz.
List $269.00 *Order #3225* **Please Call**

DJ-G1T

- Channel Scope
- 440-450 Receive
- Aircraft Receive
- 80 Memories
- 5 Autodial Mems
- Six Scan Modes
- Odd Splits in Mem
- Auto Power Off

Alinco's new 2 meter HT, the DJ-G1T, offers the new *Channel Scope* built-in spectrum analyzer. This remarkable feature lets you visually monitor band activity, much like a commercial digital spectrum analyzer. The 7 bar graph display can show activity on 7 different memory channels *or* can show band activity by frequency in either: 5, 10, 12.5, 15, 20, 25, 30 or 50 kHz steps. In addition to the 2m band, where you can transmit and receive, the DJ-G1T can also receive the 70cm-band and extended VHF from 108 to 174 MHz plus AM airband. Other features include 80 memories, cross-band semi duplex, auto power off, battery saver, scan functions, DSQ paging, and CTCSS encode. Three RF output levels are provided at .2W, 1W and 2.5W with 5W at 13.8 VDC.

Alinco DJ-G1T 144-148 MHz HT (440 MHz Rx)
List $258.00 *Order #3220* **Please Call**

DJ-191T

- LCD Display
- Redial Function
- 40 Memories
- Battery Saver
- PL Encoder
- Scanning
- DTMF Squelch
- 9 Autodial Mems.

The simple operation, slim line design and large display make the DJ-191T a favorite among hams worldwide. At only 2.25" x 6" x 1.1" it is among the slimmest full-featured HTs. The small size does not mean small features. The DJ-191T boasts 1.5W output (up to 5W with optional EBP-36N), 40 memories plus call channel, 9 autodialer memories, battery saver function, cable cloning function, auto power off with Morse alert, independent TX and RX lamps, direct keypad frequency entry, monitor and low power transmit keys and time out timer. The DJ-191T also has extended receive from 135 to 174 MHz.

Alinco DJ-191T 144 MHz HT 1.5W
List $235.00 *Order #0813* **Please Call**

Alinco DJ-191TH 144 MHz HT 5W High Power
List $258.00 *Order #3207* **Please Call**

DJ-G5TY

- V/V or U/U
- CTCSS Enc/Dec
- Dual VFO's
- 80 Memories
- Cross Band Repeat
- Auto Dialer
- Airband Rx
- Tone Burst

The Alinco DJ-G5TY is engineered with the most advanced electronic technology available. The large easy-to-read LCD display, easy-to-operate keyboard and 80 memory channels are just a few of its many features. Other features include dual VFO's, channel scope, memory channel skip, independent VHF/UHF TX/RX LED, RF attenuator and cross band repeater function. Airband and extended UHF receive are standard. CTCSS encode/decode are standard. Frequency selection is possible directly from the keypad.

Alinco DJ-G5TY 144 & 440 MHz HT
List $417.00 *Order #2480* **Please Call**

Alinco DJ-G5TH 144 & 440 MHz HT Hi Pwr 5W
List $429.00 *Order #0729* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	DJ-191T	DJ-580/2	DJ-G1T	DJ-G5TY
0557	**EBP-26N**	Battery 7.2 VDC 700 mAh	$41.00	**$34.95** (+$3)		▲		
1145	**EBP-28N**	Battery 12 VDC 700 mAh	68.00	**59.95** (+$3)		▲		
3181	**EBP-30N**	Battery 7.2 VDC 700 mAh	50.00	**44.95** (+$3)			■	
3089	**EBP-31N**	Battery 7.2 VDC 1200 mAh	79.00	**69.95** (+$3)			■	
3060	**EBP-32N**	Battery 12 VDC 700 mAh	95.00	**84.95** (+$3)			■	
1284	**EBP-33N**	Battery 4.8 VDC 650 mAh	63.00	**54.95** (+$3)	■			■
0731	**EBP-34N**	Battery 4.8 VDC 650 mAh	82.00	**72.95** (+$3)	■			■
2060	**EBP-35N**	Battery 7.2 VDC 650 mAh	97.00	**84.95** (+$3)	■			■
2983	**EBP-36N**	Battery 9 VDC 650 mAh	67.00	**56.95** (+$3)	■			■
3166	**EBP-37N**	Battery 4.8 VDC 700 mAh	34.00	**28.95** (+$3)	■			■
0708	**EDC-37**	DC Power Cable	7.00	**6.95** (+$2)	■	■	■	■
0103	**EDC-43**	Mobile DC Power Cable	8.00	**7.95** (+$2)		■		
2927	**EDC-52**	AC Quick Charger	119.00	**109.95** (+$5)			■	
2607	**EDC-60**	AC Quick Charger	94.00	**84.95** (+$5)	■			■
2284	**EDH-11**	Battery Case (6 x AA)	10.00	**9.95** (+$2)		■		
0590	**EDH-16**	Battery Case (4 x AA)	10.00	**9.95** (+$2)	■			■
2850	**EJ-12U**	CTCSS Decode	51.00	**44.95** (+$3)		■		
1945	**EJ-28U**	PL Decode	42.00	**37.95** (+$3)	■			
1441	**EME-10K**	VOX/PTT Headset	71.00	**64.95** (+$4)		■		
0465	**EME-12**	VOX/PTT Headset	70.00	**62.95** (+$4)	■		■	
0742	**EMS-8Z**	Speaker Mic	48.00	**44.95** (+$3)		■	■	■
2262	**EMS-9**	Speaker Mic	44.00	**39.95** (+$3)	■		■	
0881	**ESC-17**	Case For EBP-20N	14.00	**12.95** (+$3)		■		
2894	**ESC-23**	Case For EBP-30N	16.00	**14.95** (+$3)			■	
2875	**ESC-24**	Case For EBP-31N	21.00	**19.95** (+$3)			■	
3302	**ESC-26**	Case For EBP-22N	14.00	**12.95** (+$3)		■		
0370	**ESC-28**	Case For EBP-38N	10.00	**9.95** (+$3)	■			■
0252	**ESC-29**	Case For EBP-37N	10.00	**9.95** (+$3)	■			■
2107	**ESC-30**	Case For EBP-34/35/36	10.00	**9.95** (+$3)	■			■

DJ-582T

- LCD Display
- Auto Dialer
- 40 Memories
- DSQ Paging
- Full Duplex
- Illuminated Key Pad
- 3 Power Levels
- Auto Power Off

Alinco's DJ-582T is engineered with advanced electronic technology. The large easy-to-read LCD display, easy-to-operate illuminated keyboard and 40 memory channels are just a few of its many features. Other features include full duplex operation, dual watch, super low battery consumption function, independent VHF & UHF controls and 8 scanning modes. DTMF code squelch, DSQ paging and CTCSS encode/decode come standard. Automatic power off and battery save functions help to conserve battery life. Will operate on three different output levels.

Alinco DJ-582T 144 & 440 MHz HT 2W
List $404.00 *Order #0000* **Please Call**

Alinco DJ-582TH 144 & 440 MHz HT Hi Pwr 5W
List $426.00 *Order #0000* **Please Call**

▲ Color does not match.

YAESU

FT-11R/41R

- Aircraft Receive
- Backlit DTMF
- DTMF Paging
- Private Paging
- 150 Memories
- DTMF Auto Dialer
- Scanning
- Backlit Keypad

The FT-11R (2 meter) and FT-41R (440 MHz) are compact FM handhelds using the latest in microprocessor control. Four output power levels are available allowing up to 5 watts with optional 9.6 volt battery pack. The new compact battery design with high-efficiency MOSFET power module produces 1.5 watts from 4.8V or 5 watts from 9.6V. The alphanumeric indexing system allows you to tag memory channels and DTMF autodial memories with a six character name that is automatically displayed. 4"H x 2.25W x 1"D.

Yaesu FT-11R/31 144-148 MHz. HT 2W
List $389.00 *Order #0608* **Please Call**
Yaesu FT-11R/38 144-148 MHz. HT 5W
List $399.00 *Order #0342* **Please Call**
Yaesu FT-41R 430-450 MHz. HT
List $479.00 *Order #2849* **Please Call**

FT-51R

- 120 Memories
- Spectrascope
- Alpha Display
- Power Saver
- DTMF Paging
- Backlit Keypad
- Auto Tone Search
- Cross Band Repeat

The FT-51R introduces many first-time features! The LCD display not only provides dual frequency readouts and indicators for most functions, but also includes Spectrascope display. This unique feature displays real time, continuous scanning of activity on adjacent frequencies in VFO mode or 8 of your favorite memories. In addition, the new cloning feature can duplicate your favorite channels to any other FT-51R. Other standard features include a scrolling menu guide, tone search, built-in PL encode/decode, 5 selectable power levels, auto repeater shift, AM aircraft receive and multiple scan modes. 5/5W out with 12VDC or FNB38.

Yaesu FT-51R/31 144 & 440 MHz. HT
List $619.00 *Order #0979* **Please Call**
Yaesu FT-51R/38 144 & 440 MHz. HT 5W Batt.
List $639.00 *Order #1113* **Please Call**

YAESU

FT-50RD

- 112 Memories
- 12 VDC Direct In
- DTMF Keypad
- Alpha Display
- Dual Watch
- PL Encode/Decode
- DCS Encode/Decode
- DVRS & Page Squelch

The FT-50RD is manufactured to rigid commercial grade standards, and is the first dual band handheld amateur radio to achieve the prestigious MIL-STD-810 rating. The FT-50RD dual band HT includes: Digital Coded Squelch, super loud audio and the widest band receive allowable. The FT-50RD is rugged, reasonably priced, simple to operate and has all the features you want and is packed into an incredible 2.2"w x 3.9"H x 1.2"D.

Yaesu FT-50RD/40 144 & 440 MHz. HT 2W Batt.
List $439.00 *Order #3540* **Please Call**
Yaesu FT-50RD/41 144 & 440 MHz. HT 5W Batt.
List $449.00 *Order #3070* **Please Call**

Optional Accessories

Order #	Model	Item Description	List Price	Your Price	FT-11R	FT-51R	FT-50R
2777	**CA-10**	NC-50 Charger Adapter	$14.00	**$13.95** (+$2)	■	■	
2669	**CSC-61**	Soft Case for FBA-14	16.00	**15.95** (+$2)	■		
2673	**CSC-62**	Soft Case for FNB-31	16.00	**15.95** (+$2)	■		
0207	**CSC-66**	Soft Case for FNB-33/38	19.00	**18.95** (+$2)		■	
2952	**CSC-67**	Soft Case for FNB-31	19.00	**18.95** (+$2)		■	
1693	**E-DC5B**	Battery 9 VDC 600 mAh	26.00	**23.95** (+$3)			■
0344	**FBA-14**	Battery Holder (4 x AA)	19.00	**17.95** (+$2)	■	■	
3152	**FBA-15**	Battery Holder (4 x AA)	19.00	**17.95** (+$2)			■
0360	**FNB-31**	Battery 5 VDC 600 mAh	55.00	**51.95** (+$3)	■	■	
1081	**FNB-33**	Battery 5 VDC 1200 mAh	75.00	**69.95** (+$3)	■	■	
1568	**FNB-38**	Battery 9 VDC 600 mAh	75.00	**69.95** (+$3)	■	■	
2699	**FNB-40**	Battery 6 VDC 650 mAh	48.00	**43.95** (+$3)			■
2823	**FNB-41**	Battery 9 VDC 600 mAh	58.00	**52.95** (+$3)			■
3024	**FNB-42**	Battery 9 VDC 1100 mAh	62.00	**57.95** (+$3)			■
3490	**FNB-V47**	Battery 9 VDC 1100 mAh	55.00	**51.95** (+$3)			■
3168	**FTS-26**	CTCSS Decode for FT-11R	47.00	**44.95** (+$2)	■		
1583	**MH-19A2B**	Mini Earpiece/Microphone	30.00	**27.95** (+$3)	■	■	
3112	**MH-29A2B**	LCD Display Speaker Mic.	106.00	**99.95** (+$3)		■	
2035	**MH-32A2B**	Compact Speaker Mic.	30.00	**28.95** (+$3)		■	
2631	**MH-34A2B**	Compact Speaker Mic.	30.00	**28.95** (+$3)			■
1151	**NC-34B**	Wall Charger FNB-26/33	15.00	**14.95** (+$2)	■	■	
2566	**NC-38B**	Wall Charger FNB-38	14.00	**13.95** (+$2)	■	■	
2412	**NC-50**	Desktop Quick Charger	109.00	**99.95** (+$5)	■	■	■
3274	**NC-55B**	Wall Charger FNB-31	15.00	**14.95** (+$3)	■	■	
1129	**PA-10A**	Mobile Drop-In DC Adapter	82.00	**78.95** (+$4)	■	■	
0926	**VC-22**	VOX Headset	62.00	**56.95** (+$3)	■	■	

Note: There is **FREE** shipping on all accessory items at time of HT purchase.

VHF Marine Radios

YAESU

VXM-100B

- 10 Wx Chan.
- Dual-Watch
- Large LCD
- Squelch
- 156.05-163.275 MHz
- All US, Int'l, Can Chan.
- 25W, 1W
- MIL-STD-810E Rated

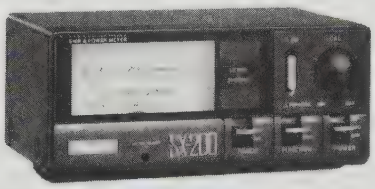
The VXM-100 fulfills all U.S. Coast Guard requirements. Important features include: selectable 25 watt or 1 watt power, 25 watts of full power for the expansive needs of open water; low, 1 watt power for limited in-harbor use. The Dual-Watch function monitors VHF Marine Channel 16 while you're using another channel. All USA, International and Canadian channels are accessible as well as 10 weather channels. The large, bright LCD display allows you to select either amber or green for safe and accurate viewing under any light condition. The built-in Time-Out timer automatically turns transmit off after 5 minutes (a requirement for marine use to conserve the vessel's battery). MIL-STD-810E rated for durability and efficiency.

Yaesu VXM-100B VHF Marine Transceiver
List $359.00 *Order #0896* **$229.95** (+$7)

DIAMOND

SX-100

The SX-100 precision SWR/Power meter covers 1.8 - 60 MHz with power ranges of 30, 300 and 3000 watts. Power measurement accuracy is ±10% with an insertion loss of less than 0.1 dB.
List $159.95 *Order #1673* **$139.95** (+$4)

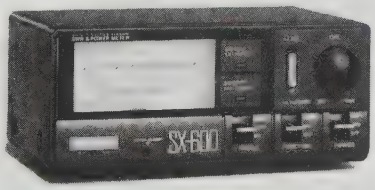


SX-200

The SX-200 covers 1.8 - 200 MHz in power ranges of 5, 20 and 200 watts. Measurement accuracy is better than ±10%. Insertion loss is < 0.15 dB.
List $119.95 *Order #2315* **$109.95** (+$4)

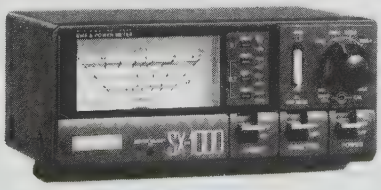
SX-400

The SX-400 VHF/UHF SWR/Power meter covers 140 - 525 MHz in ranges of 5, 20 and 200 watts. Measurement accuracy is better than ±10%.
List $139.95 *Order #2785* **$119.95** (+$4)



SX-600

The SX-600 dual-sensor HF/VHF, SWR/Power meter covers the frequency range of 1.8 -160 and 140 - 525 MHz in power ranges of 5, 20 and 200 watts. The power measurement accuracy is ±10%. Insertion loss is less than 0.1 dB.
List $199.95 *Order #2698* **$179.95** (+$7)



SX-1000

The SX-1000 dual-sensor SWR/Power meter covers 1.8 - 160 and 430 - 1300 MHz with power ranges of 5, 20 and 200 watts. Power measurement accuracy is ±10% with an insertion loss of less than 0.2 dB for sensor one (1.8 - 160 MHz) and less than 0.15 dB for sensor two (430 - 1300 MHz).
List $269.95 *Order #1053* **$239.95** (+$7)

YAESU

YS-60

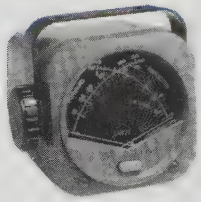
The Yaesu YS-60 is a compact peak-reading SWR/Power meter covering the frequency range of 1.6 to 60 MHz in power ranges of 20 , 200 and 2000 watts. Power measurement accuracy is ±10% with an insertion loss of less than 0.1 dB.
List $139.00 *Order #0672* **$124.95** (+$5)

YS-500

The Yaesu YS-500 VHF/UHF peak-reading SWR Power meter covers 140 to 525 MHz in power ranges of 4, 20 and 200 watts. Power measurement accuracy is better than ±10% with an insertion loss of less than 0.1 dB at 140 - 250 MHz and less than 0.2 dB at 400 - 470 MHz.
List $119.00 *Order #0988* **$99.95** (+$5)

DAIWA

CN-410M/460M/465M



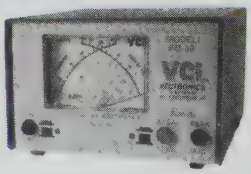
The **Daiwa CN-460M** compact cross-needle meter displays both forward and reflected power over a frequency range of 140 - 450 MHz in ranges of 15/150 watts forward and 5/50 watts reflected. Accuracy is ±15% at full scale. SO-239 jacks.
List $119.95 *Order #1800* **$89.95** (+$4)

The **Daiwa CN-410M** cross-needle meter reads forward and reflected power in ranges of 15/150 watts forward and 5/50 watts reflected simultaneously. Frequency coverage is 3.5 - 150 MHz. Accuracy is ±15% at full scale. SO-239 jacks.
List $119.95 *Order #0984* **$89.95** (+$4)

The **Daiwa CN-465** cross-needle meter reads forward and reflected power in ranges of 15/75 watts forward and 5/25 watts reflected simultaneously. Frequency coverage is 140 - 450 MHz. Accuracy is ±15% at full scale. SO-239 jacks.
List $119.95 *Order #3096* **$89.95** (+$4)

VECTRONICS

PM30



The PM30 measures and displays forward power, reflected power and SWR simultaneously on its dual movement meter system in the range of 1.8 - 60 MHz with 300 and 3000 watt settings.
List $79.95 *Order #3393* **$69.95** (+$3)

PM30UVB

The PM30UV measures and displays forward power, reflected power and SWR simultaneously in the range of 100 - 500 MHz with 30 and 300 watt settings. It utilizes BNC jacks for low loss.
List $89.95 *Order #3394* **$79.95** (+$3)

PM30UV

The PM30UV is the same as the PM30UVB above, but utilizes SO-239 jacks instead of BNC jacks.
List $89.95 *Order #3581* **$79.95** (+$3)

MFJ

MFJ-815B

The MFJ-815 cross-needle peak-reading power meter allows you to monitor both forward and reflected power simultaneously. Frequency coverage is 1.8 to 30 MHz with a measurement accuracy of ±10%. Power ranges are 200/2000 watts forward and 50 / 500 watts reflected. ◆
List $69.95 *Order #1338* **$63.95** (+$3)

MFJ-816

The MFJ-816 HF wattmeter lets you read forward and reflected power from 1.8 to 30 MHz in ranges of 30 watts and 300 watts.
List $29.95 *Order #1214* **$27.95** (+$3)

BIRD

The Bird Model 43 thruline directional wattmeter is a portable insertion-type instrument for measuring forward and reflected power in coaxial transmission lines. It will accurately measure RF power under any load condition. Plug-in elements are available to fit your frequency and power needs.

Bird 43 UHF *Order #1739* **$249.95** (+$7)

Bird 43 N *Order #1738* **$249.95** (+$7)

25C Element 25 watt 100 - 200 MHz.
Order #1736 **$68.00** (+$3)

50C Element 50 watt 100 - 200 MHz.
Order #1741 **$68.00** (+$3)

250H Element 250 watt 2 - 30 MHz.
Order #1749 **$84.00** (+$3)

1000H Element 1000 watt 2 - 30 MHz.
Order #1750 **$84.00** (+$3)

● Please call for elements not listed.

MFJ-989C

This world-famous 3 KW HF antenna tuner from MFJ features two massive transmitting capacitors and a roller inductor with a three digit counter to let you get the SWR down to the absolute minimum. Frequency range is 1.8 to 30 MHz. The peak reading cross-needle SWR/power meter has forward power ranges of 200 and 2,000 watts. Outputs for two coaxial cables, one wire or balanced line and dummy load are provided. A 300 watt, 50 ohm dummy load is built-in, making exciter tuning fast and easy. 10¾" x 4½" x 15". ◆
List $349.95 *Order #1332* **$329.95** (+$8)

MFJ-969

The MFJ-969 is the world's only 300 watt AirCore roller inductor tuner covering 160 through 6 meters. You get a cross-needle SWR/wattmeter, 8 position antenna switch, built-in 50 ohm dummy load and a heavy duty 4:1 balun. 3½ x 10½ x 9½".
List $179.95 *Order #3538* **$164.95** (+$8)

MFJ-941E

This 300 watt PEP antenna tuner from MFJ features continuous frequency coverage from 1.8 to 30 MHz, outputs for two coaxial cables and one random wire or balanced line. The SWR/power meter reads forward and reflected power in ranges of 30 and 300 watts. 11" x 3" x 7". ◆
List $109.95 *Order #1130* **$99.95** (+$4)

MFJ-945D

This compact 300 watt tuner with illuminated cross-needle display, is ideal for mobile operation. The convenient placement of controls makes tuning fast and easy while driving. The SWR/power meter reads in 30 & 300 watt scales. 8" x 2" x 6".◆
List $99.95 *Order #1541* **$89.95** (+$4)

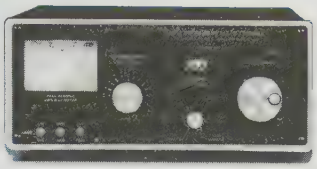
MFJ-949EY

MFJ's deluxe 300 watt Versa Tuner II gives you full coverage from 1.8 to 30 MHz, a peak and average reading cross-needle SWR/power meter and a built-in 300 watt dummy load. Outputs are provided for two coaxial cables and one random wire or balanced line. 10" x 3" x 7".
List $149.95 *Order #1146* **$136.95** (+$6)

MFJ-948

This deluxe tuner from MFJ offers all of the features of the popular MFJ-949EY without the dummy load. ◆
List $129.95 *Order #0648* **$119.95** (+$5)

MFJ-986



This new and innovative Differential-T™ 3 KW roller inductor tuner from MFJ covers 1.8 to 30 MHz continuously. The lighted cross-needle meter not only shows you both forward and reflected power at a glance, but also has a peak reading function. Outputs are provided for two coaxial cables, one balanced line and a dummy load. ◆
List $299.95 *Order #0706* **$269.95** (+$7)

MFJ-962C

The MFJ 1.5 KW Versa Tuner III features two continuously variable capacitors to minimize your SWR. The peak and average reading cross-needle SWR/power meter makes tuning a snap. Outputs for two coax cables, one random wire and one balanced line. 10¾" x 4½" x 15". ◆
List $249.95 *Order #1330* **$229.95** (+$8)

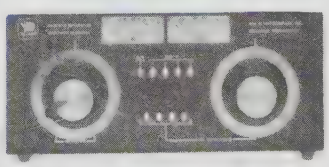
NOTE: MFJ tuners marked with a ◆ feature illuminated meters. For these meters to illuminate you must provide 12VDC or purchase the MFJ-1312.

AMERITRON

ATR-15

The Ameritron ATR-15 "T" network HF antenna tuner will handle a full 1500 watts of RF output over its entire frequency range of 1.8 to 30 MHz. Five outputs are provided, three for coaxial cable, one for single wire hook-up and one for balanced line. A peak reading wattmeter/SWR bridge accurately reads envelope power up to 2 kilo-watts.
List $399.00 *Order #0462* **$349.95** (+$9)

MB-V-A



This rugged 3 kilo-watt HF antenna tuner from Nye Viking features a heavy-duty silver-plated variable inductor with a 25:1 vernier dial, 7,000 volt variable capacitor and 15,000 volt switch selected capacitors. Dual-metering provides for hands free SWR monitoring. Outputs are provided for two coaxial cables, one single wire and one balanced line. Please call to check availability on this item.
List $830.00 *Order #1900* **$749.95** (+$12)

VCi VECTRONICS

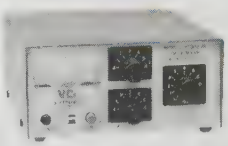
VC300D

The VC300D is Vectronics' top-of-the line antenna tuner. This model provides the user the capability of reading peak output power via the digital bargraph display. Covers 1.8-30 MHz, 300 watts max.
List $199.95 *Order #3384* **$169.95** (+$6)

VC300DLP

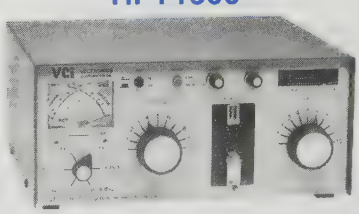
The VC300DLP tuner has a built-in dummy load, a peak or average reading meter and is easy to operate. Compatible with almost any antenna. Operating range is 1.8-30 MHz with max. power rated at 300 watts continuous. 10.2"x9.4"x3.5"
List $159.95 *Order #3398* **$139.95** (+$5)

VC300M



The VC300M tuner is compact, lightweight, easy to operate and perfect for mobile operation. Features a dual movement, backlit meter for viewing power and SWR at the same time. Covers 1.8-30 MHz and is rated at 300 watts max. power.
List $109.95 *Order #3383* **$99.95** (+$5)

HFT1500



The HFT1500 is a digital peak reading tuner with roller inductors. Features dual movement power and SWR backlit meter and LED bargraph display for peak reading. Frequency coverage is from 1.8-30 MHz, rated at 2kW PEP SSB max. power.
List $459.95 *Order #3385* **$369.95** (+$8)

B&W

VS-300A

The VS-300A will handle up to 300 watts of power from 1.8 to 30 MHz. Outputs are provided for two coaxial cables and one single wire or balanced line.
List $111.00 *Order #0015* **$99.95** (+$5)

cushcraft

HF Antennas

A3S

When space is at a premium and you want the performance of a full-size tribander, the A3S is the right choice. Frequency: 14, 21, 28 MHz Forward gain: 8 dB. Boom length: 14 ft. Weight: 27 lbs. Wind load: 4.36 sq. ft.
List $497.00 *Order #2779* **$379.95** (+$20)

A3SDX

New DX version of A3S.
List $566.50 *Order #0261* **$419.95** (+$20)

A743 40 and 30 meter add-on kit for the A3S/DX.
List $155.03 *Order #0609* **$119.95** (+$5)

A4S

A high-performance tribander, the A4S is a good choice for the DX'er or contester. Frequency: 14, 21, 28 MHz. Forward gain: 8.9 dB. Boom length: 18 ft. Weight: 37 lbs. Wind load: 5.5 sq. ft.
List $597.00 *Order #0333* **$439.95** (+$21)

A744 40 and 30 meter add-on kit for the A4S.
List $159.0 *Order #0610* **$119.95** (+$5)

10-3CD

For performance the 10 meter Skywalker is a proven winner. Frequency: 28 MHz. Forward gain: 8 dB. Boom length: 10 ft. Weight: 11 lbs. Wind load: 2.3 sq. ft.
List $232.05 *Order #0000* **$169.95** (+$9)

10-4CD

For maximum gain and performance, select this four element model. Frequency: 28 MHz. Forward gain: 10 dB. Boom length: 16 ft. Weight: 18 lbs. Wind load: 3.1 sq. ft.
List $349.00 *Order #0620* **$269.95** (+$10)

R5

A high-performance no-ground radial 5 band vertical. Easy to mount in any location. Frequency: 10, 12, 15, 17 and 20 meters. Gain: 3 dB. Height: 17 ft. Weight: 9 lbs. Wind load: 1.4 sq. ft.
List $382.01 *Order #1878* **$239.95** (+$16)

R7

Experience seven band performance anywhere! No ground radials required. Frequency: 10, 12, 15, 17, 20, 30 and 40 meters. Gain: 3 dB. Height: 22.5 ft. Weight: 12.3 lbs. Wind load: 2.25 sq. ft.
List $510.01 *Order #0855* **$329.95** (+$17)

R7000

In the proud tradition of the famous R7, the R7000 also covers 10 to 40 meters. Gain: 3 dB. Height: 24 ft. Weight: 18 lbs. Wind load: 2 sq. ft.
List $510.00 *Order #1358* **$379.95** (+$17)

VHF/UHF Antennas

17B2

17 element 2 meter SSB/CW Yagi. Frequency: 144-145 MHz. Forward gain: 18 dB. Boom length: 31 ft. Weight: 15.75 lbs. Wind load: 3.9 sq. ft.
List $246.00 *Order #1668* **$179.95** (+$9)

26B2

26 element 2 meter FM Yagi. Frequency: 144-148 MHz. Forward gain: 18.8dB. Boom length: 15 ft. Weight: 21.5 lbs. Wind load: 4.84 sq. ft.
List $406.00 *Order #0836* **$299.95** (+$10)

13B2

13 element wideband 2 meter Yagi. Frequency: 144-148 MHz. Forward gain: 15.8 dB. Boom length: 15 ft. Weight: 7 lbs. Wind load: 1.8 sq. ft.
List $142.00 *Order #1357* **$109.95** (+$8)

124WB

4 element wideband 2 meter Yagi. Frequency: 144-148 MHz. Forward gain: 10.2 dB. Boom length: 4 ft. Weight: 3 lbs. Wind load: 0.34 sq. ft.
List $73.00 *Order #2905* **$54.95** (+$7)

A148-3S

3 element 2 meter Yagi. Frequency: 144-148 MHz. Forward gain: 7.8 dB. Weight: 1.5 lbs. Wind load: .27 sq. ft.
List $47.50 *Order #0685* **$36.95** (+$7)

A148-10S

10 element 2 meter FM Yagi. Frequency: 144 - 148 MHz. Forward gain: 13.2 dB. Boom length: 12 ft. Weight: 6 lbs. Wind load: 1.21 sq. ft.
List $85.00 *Order #1961* **$64.95** (+$7)

A449-11S

11 element 70 cm FM Yagi. Frequency: 440-450 MHz. Forward gain: 13.2 dB. Boom length: 4.2 ft. Weight: 4 lbs. Wind load: 0.39 sq. ft.
List $69.00 *Order #0629* **$54.95** (+$6)

A449-6S

6 element 70 cm FM Yagi. Frequency: 440-450 MHz. Forward gain: 10.5 dB. Boom length: 2.9 ft. Weight: 3 lbs. Wind load: 0.3 sq. ft.
List $45.00 *Order #0628* **$35.95** (+$5)

A270-10S

10 element dual band Yagi. Frequency: 144-148, 430-450 MHz. Forward gain: 10 dB. Weight: 1.8 lbs. Wind load: .725 sq. ft.
List $99.00 *Order #2402* **$74.95** (+$7)

A270-6S

6 element dual band Yagi. Frequency: 144-148, 430-450 MHz. Forward gain: 7.8 dB. Boom length: 2.8 ft.
List $75.00 *Order #0158* **$54.95** (+$6)

◆ For Cushcraft antennas not listed, please call.

The **RINGO** line of Cushcraft verticals feature: compact size, easy assembly, wide bandwidth, low angle of radiation and direct DC ground for improved static protection.

AR-6

Frequency: 50-54 MHz. Forward Gain: 3.75 dB. Height: 10.1 ft. Wind load: 0.37 sq. ft.
List $71.00 *Order #0634* **$49.95** (+$8)

AR-10

Frequency: 28-29.7 MHz. Forward Gain: 3.75 dB. Height: 17.6 ft. Wind load: 1.68 sq. ft.
List $85.00 *Order #0635* **$62.95** (+$8)

AR-2

Frequency: 135-160MHz. Forward Gain: 3.75 dB. Height: 3.9 ft. Wind load: 0.21 sq. ft.
List $50.00 *Order #0633* **$39.95** (+$4)

ARX-2B

Frequency: 135-160 MHz. Forward Gain: 7.0dB. Height: 14 ft. Wind load: 0.5 sq. ft.
List $73.00 *Order #0642* **$54.95** (+$5)

AR-220

Frequency: 220-225 MHz. Forward Gain: 3.75 dB. Height: 2.6 ft. Wind load: 0.2 sq. ft.
List $48.68 *Order #0636* **$29.95** (+$4)

AR-450

Frequency: 440-460 MHz. Forward Gain: 3.75 dB. Height: 1.4 ft. Wind load: 0.1 sq. ft.
List $35.00 *Order #0637* **$29.95** (+$4)

ARX-450B

Frequency: 435-450 MHz. Forward Gain: 7.0 dB. Height: 4.9 ft. Wind load: 0.2 sq. ft.
List $73.00 *Order #0645* **$54.95** (+$4)

AR-270

Frequency: 144-148 & 435-450 MHz. Forward Gain: 3.7dB. 2 meters, 5.5dB 70 cm. Height: 3.75 ft. Wind load: 0.27 sq. ft.
List $88.00 *Order #0583* **$74.95** (+$5)

AR-270B

Frequency: 144-148 & 430-450 MHz. Forward Gain: 5.5dB. 2 meters, 7.5dB 70 cm. Height: 7.7 ft. Wind load: 0.47 sq. ft.
List $128.00 *Order #1960* **$99.95** (+$6)

ARX-270U

Freq.: 144-148, 430-450 MHz. For. Gain: 9, 12 dB. Ht.: 16.5 ft. Wind load: .95 sq. ft. UHF connection.
List $310.00 *Order #1065* **$229.95** (+$8)

ARX-270N

Same as ARX-270U, but with an N connection.
List $310.00 *Order #3315* **$229.95** (+$8)

DIAMOND

VHF/UHF Base Antennas

F-23A

High-performance 5/8 wave 2 meter vertical antenna. Gain: 7.8 dB. Power rating: 200 watts Length: 178.3" Weight: 3.5 lbs. Connector: UHF.
List $172.95 *Order #2235* **$149.95** (+$8)

X-50A

Compact dual-band vertical antenna. Frequency: 2 meter and 70cm. Gain: 4.5 dB (2m), 7.2 dB (70cm) Power rating: 200 watts Length: 67" Weight: 2.3 lbs. Connector: UHF.
List $125.95 *Order #2553* **$99.95** (+$9)

X-200A

High-performance dual-band vertical antenna for fixed station or repeater operation. Frequency: 2 meter and 70cm. Gain: 6.0 dB (2m), 8.0 dB. (70cm) Power rating: 200 watts Length: 98.4" Weight: 2.6 lbs. Connector: UHF.
List $167.95 *Order #2341* **$139.95** (+$9)

X-510NA

This high-gain dual-band vertical antenna is ideal for high-performance base station or repeater operation. Frequency: 2 meter and 70cm. Gain: 8.3 dB. (2m), 11.7 dB. (70cm) Power rating: 200 watts Length: 204.7" Weight: 5.3 lbs. Connector: N. Wind Survival: 90 MPH.
List $219.95 *Order #2448* **$189.95** (+$10)

X-500HNA

The X500H combines the same performance specifications as the X500A with commercial quality construction for 130 MPH wind survival. A good choice for high tower installations. Connector: N
List $269.95 *Order #0178* **$239.95** (+$8)

X-700HA

This maximum performance dual-band vertical antenna features the highest gain available. Frequency: 2 meter and 70cm. Gain: 9.3dB. (2m), 13.0 dB. (70cm) Power rating: 200 watts Length: 24' Weight: 12 lbs. Connector: UHF. Wind Survival: 90 MPH.
List $439.95 *Order #2609* **$389.95** (+$13)

V-2000A

A true high-performance 2 meter, 6 meter and 70cm triband vertical antenna. Frequency: 2 meter, 6 meter and 70cm. Gain: 6.2 dB. (2m), 2.15 dB. (6m), 8.4 dB. (70cm) Power rating: 150 watts Length: 98.4" Weight: 2.65 lbs. Connector: UHF.
List $172.95 *Order #0153* **$149.95** (+$8)

- Base antennas are constructed with a rugged fiberglass sheath and stainless steel hardware.
- For Diamond antennas and accessories not listed, please call for pricing and availability.
- Installing all base antennas can be dangerous! Request our free *Antenna Safety* pamphlet.

VHF/UHF Mobile Antennas

NR-770RA

High-performance 2 meter/70cm dual-band mobile antenna. Gain: 3.0 dB.(2m), 5.5dB.(70cm). Power rating: 200 watts Length: 39" Weight: .46 lbs. Mount: PO (SO-239).
List $62.95 *Order #2783* **$54.95** (+$5)

NR-770HA

Same as NR-770RA but with an open-air coil.
List $62.95 *Order #2568* **$54.95** (+$5)

NR-72BNMO

A great, compact dual-band mobile antenna. Gain: 2.15 dB.-2m, 2.15 dB.-70cm. Power rating: 100 watts. Length: 14" Color: Black. Mount: NMO.
List $46.95 *Order #1578* **$39.95** (+$6)

NR-790A

Maximum performance dual-band mobile antenna. Gain: 4.5 dB. (2m), 7.2 dB. (70cm). Power rating: 120 watts Length: 57" Weight: .8 lbs. Mount: PO (SO-239).
List $94.95 *Order #2711* **$79.95** (+$5)

SG-2000

High-performance 7/8 wave 2 meter mobile antenna. Gain: 5.2 dB. Power rating: 150 watts Length: 62.6" Weight: .88 lbs. Mount: PO (SO-239).
List $89.95 *Order #2095* **$79.95** (+$5)

SG-7500A

High-performance dual-band mobile antenna. Gain: 3.5 dB. (2m), 6.0 dB. (70cm). Power: 150 W. Length: 38" Wt: .8 lbs. Mount: PO (SO-239).
List $86.95 *Order #2366* **$79.95** (+$5)

SG-7900

Maximum performance dual-band mobile antenna. Gain: 5.0 dB. (2m), 7.6 dB. (70cm). Power rating: 150 watts Length: 62" Weight: .8 lbs. Mount: PO (SO-239).
List $124.95 *Order #0142* **$109.95** (+$6)

Dual-Band HT Antenna

DIAMOND

RH-77CA

This Diamond flexible H.T. gain antenna provides ¼ wave on 2 meters and ½ wave on 70 cm.
List $34.95 *Order #2368* **$29.95** (+$4)

Maldol

HS-702S

The Maldol HS-702S is similar to Diam. RH-77CA.
List $19.95 *Order #2559* **$18.95** (+$4)

AH-209S

A 2M/440 duck that is less than 3 inches long!
List $18.95 *Order #3417* **$17.95** (+$3)

MX Series Duplexers

Passband width: LPF: 1.6-30 MHz, 140-150 MHz. HPF: 400-460 MHz, BPF: 110-170 MHz. Power-rating: LPF-150 watts, HPF-100 watts, BPF-800 watts. Insertion loss: LPF <0.1 dB., HPF <0.2 dB. Input isolation: > 60 dB.

MX-72D

Connectors: Mixer-UHF female, LPF-UHF male, HPF-UHF male.
List $52.95 *Order #2573* **$44.95** (+$3)

MX-72DN

Connectors: Mixer-UHF female, LPF-UHF male, HPF-N male.
List $52.95 *Order #2867* **$44.95** (+$3)

MX-72H

Connectors: Mixer-UHF female, LPF-12" coax with UHF male, HPF-12" coax with UHF male.
List $58.95 *Order #2571* **$49.95** (+$3)

MX-72N

Connectors: Mixer-UHF female, LPF-12" coax with UHF male, HPF-12" coax with N male.
List $58.95 *Order #2563* **$49.95** (+$3)

MX-2000 TRIPLEXER

Connectors: Mixer-UHF female, LPF-12" coax with UHF male, HPF-12" coax with UHF male, BPF-12" coax with UHF male.
List $94.95 *Order #2681* **$79.95** (+$4)

Mobile Mounting Brackets

K-300

Deluxe folding-type rain gutter mount with **NO** connector or cable.
List $39.95 *Order #2034* **$36.95** (+$4)

K-300C

Deluxe folding-type rain gutter mount with 6 feet of low-loss coaxial cable and connector.
List $69.95 *Order #1810* **$64.95** (+$4)

K-400

Deluxe adjustable hatchback-trunklid mount with **NO** connector or cable.
List $39.95 *Order #0978* **$37.95** (+$4)

K-400C

Deluxe adjustable hatchback-trunklid mount with 6 feet of low-loss cable and connector.
List $69.95 *Order #2072* **$64.95** (+$5)

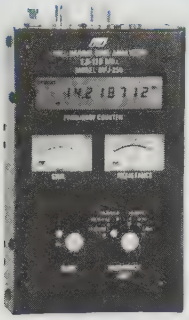
K-540

Black swival mirror mount. No cable.
List $39.95 *Order #0573* **$34.95** (+$4)

GLP-58

UHF base adapter with 90 coax entry for K-300 and K-400 mounts.
List $10.45 *Order #2210* **$9.95** (+$4)

MFJ-259



This MFJ-259 SWR analyzer features a built-in 10 digit high-contrast LCD frequency counter. Reading your antennas SWR and finding its resonance has never been easier. All you do is connect your antenna, set your SWR analyzer to the frequency you want and read your SWR. Frequency coverage is from 1.8 to 170 MHz. Find your antennas resonant frequency at your feedline, monitor your SWR as you adjust your beam or vertical. Shorten or lengthen your dipole to see the effect immediately. Includes a built-in RF Resistance Meter. Uses 6 AA cells (not supplied) or MFJ-1312B.
List $239.95 *Order #1611* **$209.95** (+$5)

MFJ-207

See the resonant frequency of your antenna without using a transmitter, SWR meter or any other equipment. A frequency counter output is provided for precise digital readout. Coverage is 10 - 160 meters. Requires 9V battery (not supplied) or MFJ-1312B.
List $79.95 *Order #2679* **$74.95** (+$4)

MFJ-208

The same features of the MFJ-207, but over the frequency range of 138 to 156 MHz.
List $79.95 *Order #0244* **$74.95** (+$4)

MFJ-209

The same features of the MFJ-207 over the frequency range of 1.8 to 170 MHz.
List $109.95 *Order #3122* **$99.95** (+$4)

MFJ-249

All the features of the MFJ-259 without a built-in RF Resistance Meter.
List $219.95 *Order #3101* **$199.95** (+$5)

ALPHA DELTA

DX-A

This 40, 80 and 160 meter twin sloper is broadbanded and easy to tune. Overall length is approximately 115 feet.
List $59.95 *Order #0378* **$54.95** (+$6)

DX-B

This sloper is designed for the ham and operates on 160 - 30 meters. Only 60 foot long.
List $69.95 *Order #1041* **$67.95** (+$6)

DX-CC

This no trap dipole for 10, 15, 20, 40 and 80 meters is only 82 feet long.
List $119.95 *Order #1031* **$109.95** (+$6)

DX-DD

For limited space installations this no trap shortened dipole for 40 and 80 meters does it in 82 ft.
List $89.95 *Order #0675* **$79.95** (+$6)

DX-EE

This shortened "No Trap" dipole for 10, 15, 20 and 40 meters is only 40 feet long.
List $99.95 *Order #1905* **$89.95** (+$6)

HUSTLER

HF Antennas

6-BTV

Constructed of 1¼" heavy wall aluminum this six band trap vertical will handle the full legal limit of power on SSB or CW. Frequency: 10, 15, 20, 30, 40 and 75/80 meters. Height: 24 ft. Weight: 16.5 lbs.
List $246.95 *Order #2012* **$179.95** (+$18)

5-BTV

You will have full-band coverage on 10-40 meters (1.6:1 at band edges typical) with this five band trap vertical. Frequency: 10, 15, 20, 40 and 75/80 meters. Height: 24.5 ft. Weight: 17 lbs.
List $211.95 *Order #2011* **$149.95** (+$17)

4-BTV

This four band trap vertical features exceptional mechanical construction and full-band coverage (typical SWR 1.6:1 at band edges). Frequency: 10, 15, 20 and 40 meters. Height: 21.5 ft. Weight: 15 lbs.
List $166.95 *Order #2010* **$119.95** (+$17)

30-MTK

30 meter add-on kit for the 4-BTV and 5-BTV.
List $41.95 *Order #2021* **$39.95** (+$5)

HUSTLER

Mobile HF Antennas

Standard Resonators (400W)

Order #	Model	Item Description	Approx. Bandwidth	List Price	Your Price	Ship.
1984	**RM-10**	10 Meter Resonator	150-250 kHz	$15.95	**$13.95**	(+$4)
1987	**RM-15**	15 Meter Resonator	100-150 kHz	15.95	**13.95**	(+$4)
1989	**RM-20**	20 Meter Resonator	80-100 kHz	21.95	**18.95**	(+$5)
1991	**RM-30**	30 Meter Resonator	50-60 kHz	24.95	**19.95**	(+$5)
1992	**RM-40**	40 Meter Resonator	40-50 kHz	24.95	**19.95**	(+$5)
2696	**RM-75**	75 Meter Resonator	25-30 kHz	26.95	**20.95**	(+$5)
2825	**RM-80**	80 Meter Resonator	25-30 kHz	26.95	**20.95**	(+$5)

Super Resonators (1KW)

Order #	Model	Item Description	Approx. Bandwidth	List Price	Your Price	Ship.
1985	**RM-10-S**	10 Meter Resonator	250-400 kHz	$23.95	**$19.95**	(+$5)
1988	**RM-15-S**	15 Meter Resonator	150-200 kHz	24.95	**19.95**	(+$5)
1990	**RM-20-S**	20 Meter Resonator	100-150 kHz	28.95	**23.95**	(+$6)
2463	**RM-40-S**	40 Meter Resonator	50-80 kHz	35.95	**28.95**	(+$6)
1697	**RM-75-S**	75 Meter Resonator	50-60 kHz	49.95	**39.95**	(+$6)
2411	**RM-80-S**	80 Meter Resonator	50-60 kHz	49.95	**39.95**	(+$6)

Accessories

Order #	Model	Item Description	List Price	Your Price	Ship.
1963	**BM-1**	Bumper Mount	$21.95	**$19.95**	(+$3)
1964	**C-29**	Stainless Steel Spring 3/8" 24	17.95	**15.95**	(+$3)
1944	**C-30**	Chrome Plated Spring 3/8" 24	11.95	**10.95**	(+$3)
1965	**C-32**	Chrome Plated Ball Mount	11.95	**10.95**	(+$3)
1981	**MO-1**	Mobile Mast 15" Fold Point	31.95	**24.95**	(+$5)
1982	**MO-2**	Mobile Mast 27" Fold Point	31.95	**24.95**	(+$5)
1206	**MO-3**	54" Mobile Mast	23.95	**19.95**	(+$4)
2120	**MO-4**	22" Mobile Mast	19.95	**16.95**	(+$3)
0696	**QD-2**	Quick Disconnect 3/8" 24	19.95	**16.95**	(+$2)
2306	**RSS-2**	Resonator Spring 3/8" 24	9.95	**8.95**	(+$2)
2003	**SSM-1**	Ball Mount and Spring	46.95	**39.95**	(+$4)
2004	**SSM-2**	Ball Mount	26.95	**20.95**	(+$3)
2005	**SSM-3**	Stainless Steel Spring 3/8" 24	24.95	**19.95**	(+$4)

HUSTLER®

VHF/UHF Antennas

G7-144

A high-performance 2 meter vertical for fixed station or repeater operation. Frequency: 2 meters. 600 Watts. N-fitting. Gain: 7 dB. Height: 15.3 ft. Weight: 10 lbs.
List $209.95 *Order #1972* **$149.95** (+$13)

G6-144B

Solid construction and dependable performance make this antenna popular for repeater applications. Frequency: 2 meters. 600 Watts. SO-239. Gain: 6 dB. Height: 9.9 ft. Weight: 6.8 lbs.
List $149.95 *Order #1971* **$109.95** (+$13)

G6-270R

Experience superior fixed station or repeater performance with this VHF/UHF fiberglass vertical antenna. Frequency: 144-148/430-450 MHz 100 Watts. Gain: 6 dB. Height: 102 inches. Weight: 6 lbs.
List $208.95 *Order #2918* **$149.95** (+$7)

CGT-144

2 meter collinear trunk lip mount mobile antenna. Gain: 5.2 dB. Length: 7.1 ft.
List $51.95 *Order #1967* **$45.95** (+$4)

CG-144

2 meter collinear antenna only.
List $31.95 *Order #1966* **$28.95** (+$4)

CGT-220

220 MHz collinear trunk lip mount mobile antenna. Gain: 5.2 dB. Length: 4.9 ft.
List $51.95 *Order #1968* **$45.95** (+$4)

CG-220

220 MHz collinear antenna only.
List $31.95 *Order #0768* **$28.95** (+$4)

RX-2

2 meter 5/8 wave magnetic mount mobile antenna. Gain: 3.4 dB. Height: 50 inches.
List $24.95 *Order #0528* **$19.95** (+$3)

SF-2

2 meter 5/8 wave "Buckbuster" mobile antenna. Gain: 3.4 dB. Height: 50 inches.
List $14.95 *Order #1999* **$12.95** (+$3)

SF-220

220 MHz 5/8 wave mobile antenna. Gain: 3.4 dB. Height: 31 inches.
List $14.95 *Order #0834* **$12.95** (+$3)

MKR-2

Radial Kit to convert mobile antennas to fixed station operation.
List $20.95 *Order #1977* **$17.95** (+$3)

Accessories

Order #	Model	Item Description	List Price	Your Price	Ship.
2067	**GCM-1**	Gutter Clip Mount	$12.95	**$10.95**	(+$2)
1975	**HLM**	Adjustable Trunk Lip Mount	22.95	**19.95**	(+$3)
1976	**HOT**	Quick Disconnect Trunk Mount	23.95	**20.95**	(+$3)
1980	**MM-3**	Universal Mount	21.95	**19.95**	(+$3)
0187	**RVM**	Recreational Vehicle Mount	20.95	**17.95**	(+$3)
2007	**TLM**	Trunk Lip Mount	21.95	**17.95**	(+$3)

TELEX hy-gain

TH7DXS

This seven element broadbanded tri-bander uses stainless steel hardware for all electrical and most mechanical connections. Frequency: 14, 21, 28 MHz. Gain: 9.6 dB. Boom length: 24 ft. Wt.: 82 lbs. Wind load: 9.4 sq. ft.
List $795.95 *Order #2475* **$729.95** (+ship)

TH5Mk2

The TH5Mk2 features five elements on a 19' boom with four active elements on 10, 15 and 20 meters. Gain: 9.0 dB. Wt.: 77 lbs. Wind load: 7.4 sq. ft.
List $682.95 *Order #2472* **$609.95** (+ship)

TH3JRS

This tri-bander delivers top performance in a compact package for limited space installations. Frequency: 14, 21, 28 MHz. Gain: 8 dB. Boom length: 12 ft. Wt.: 20 lbs. Wind load: 3.4 sq. ft.
List $315.95 *Order #2382* **$279.95** (+ship)

Explorer 14

Enjoy tunerless edge-to-edge bandwidth on 10, 15 and 20 meters. Gain: 7.5 dB. Boom length: 14.1 ft. Wt.: 50 lbs. Wind load: 7.5 sq. ft.
List $527.95 *Order #2009* **$459.95** (+ship)

105BAS

For top ten meter performance choose this five element Yagi. Gain: 12 dB. Boom length: 24 ft. Wt.: 29 lbs. Wind load: 3.9 sq. ft.
List $246.95 *Order #2481* **$229.95** (+ship)

TELEX hy-gain

ROTORS

AR-40 Light Duty. Wind load: 3 sq. ft.
List $256.95 *Order #2394* **$229.95** (+$7)

CD45 II Light Duty. Wind load: 8.5 sq. ft.
List $361.95 *Order #2393* **$319.95** (+$8)

HAM IV Medium Duty. Wind load: 15 sq. ft.
List $509.95 *Order #2392* **$449.95** (+$8)

T²X Heavy Duty. Wind load: 20 sq. ft.
List $607.95 *Order #2391* **$519.95** (+$9)

HDR300A Heavy Duty Digital. Load: 25 sq. ft.
List $1198.95 *Order #2386* **$1039.95** (+$11)

YAESU

ROTORS

G-450XL Light Duty. Wind load: 10 sq. ft.
List $269.00 *Order #0859* **$239.95** (+$8)

G-800S Medium Duty. Wind load: 16 sq. ft.
List $389.00 *Order #1860* **$329.95** (+$8)

G-800SDX Medium Duty. Wind load: 16 sq. ft.
List $499.00 *Order #0863* **$399.95** (+$8)

G-1000SDX Heavy Duty. Wind load: 23 sq. ft.
List $599.00 *Order #0865* **$499.95** (+$9)

G-5400B Az-El. Lt-Medium Wind load: 12 sq. ft.
List $619.00 *Order #2236* **$519.95** (+$9)

Antenna Specialists unique line of "On-Glass"® antennas transmit and receive through glass. These efficient antennas mount high on the vehicle for maximum radiation pattern and range. Installation is easy with the "Duo-Bond" mounting method.

HM 151.3G

2 meter "On-Glass"® antenna. Frequency: 144-174 MHz tunable. Gain: 3.0 dB. Whip Length: 33"
List $51.75 *Order #1605* **$46.95** (+$5)

HM 220.3G

220 MHz On-Glass antenna. Gain: 3.0 dB.
List $51.75 *Order #1604* **$49.95** (+$5)

HMR 450.5G

Collinear "On-Glass"® UHF antenna. Frequency: 410-512 MHz. Gain: 5.0 dB. Whip Length: 30"
List $57.25 *Order #1090* **$49.95** (+$5)

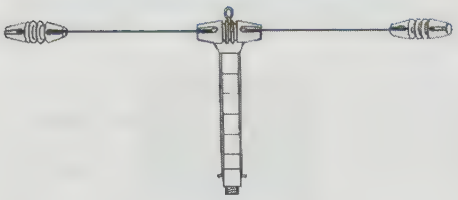
ASC-191

This double-chain bumper mount will hold the heaviest of mobile antennas securely.
List $53.00 *Order #1630* **$44.95** (+$5)

HM 382

Reinstallation mounting kit for the "On Glass"® series of antennas.
List $8.50 *Order #1887* **$7.95** (+$3)

Van Gorden



G5RV-E

This 80 to 10 meter dipole is fully assembled and ready to install with installation instructions. The antenna is constructed of 102 feet of heavy #14 (7/22) stranded hard drawn copper antenna wire and is center fed with 31 feet of 450 ohm balanced feedline. It includes a center insulator with eye hook. The feedline is terminated with a SO-239 connector for convenient hookup to coaxial cable.
List $28.95 *Order #0341* **$27.95** (+$4)

G5RV-JR

The G5RV-JR is similar to the G5RV-E above but covers only 40 to 10 meters, is only 52 feet long and has 17 feet of feedline.
List $24.95 *Order #2518* **$22.95** (+$4)

G5RV-M

The G5RV-M is similar to the G5RV-E above but covers 160 to 10 meters, is 204 feet long and has 65 feet of feedline.
List $49.95 *Order #0835* **$47.95** (+$5)

MFJ-931

Poor RF grounding can cause "hot spots", TVI/RFI, RF feedback and weak signal reports. The MFJ artificial RF ground is designed to resonate a random length of wire thrown along the floor and produce a tuned counterpoise for your antenna. This artificial ground effectively provides your rig with near earth ground potential, improving performance and eliminating RF problems.
List $79.95 *Order #2176* **$74.95** (+$4)

MFJ-1621

Operating on 10, 12, 15, 17, 20, 30 and 40 meters from virtually any location is made possible with this compact portable antenna. Housed in a small cabinet measuring only 6"x3"x6" with a 54" telescopic antenna, this unit is ideal for apartment or portable operations. Maximum performance can be achieved with a good counterpoise system such as the MFJ-931 Artificial Ground.
List $79.95 *Order #0561* **$74.95** (+$4)

B&W

AT-55

Only 55 feet long, this trap dipole provides efficient operation on four bands. Frequency: 10, 15, 20 and 40 meters.
List $99.50 *Order #1679* **$89.95** (+$4)

AT-110

This popular five band trap dipole is only 110 feet long. Frequency: 10, 15, 20, 40 and 80 meters.
List $99.50 *Order #1677* **$89.95** (+$5)

AS-40

Only 40 feet in length, this trap dipole gives good coverage on 10, 15, 20 and 40 meters.
List $164.50 *Order #0131* **$139.95** (+$5)

AP-10

Designed for those who cannot erect a permanent antenna, the AP-10 attaches quickly to a window and with the aid of a counterpoise wire provides good performance on 2, 6, 10, 12, 15, 18, 20, 30 and 40 meters.
List $69.95 *Order #1676* **$59.95** (+$4)

AS-160

Nearly half the length of a full-size dipole, this efficient antenna gives excellent results on 20, 40, 80 and 160 meters. Length: 137 ft.
List $164.50 *Order #2444* **$139.95** (+$6)

AS-80

For limited space installations this three-band dipole offers good performance on 20, 40 and 80 meters. Length: 78 ft.
List $127.50 *Order #2443* **$109.95** (+$5)

Valor

"The Clear Connection"

■ **Antenna Safety**
Installing base antennas can be dangerous! If you are unfamiliar with outdoor antenna installations request our free pamphlet titled *Antenna Safety Advisory.*

Order #	Model	Item Description	List Price	Your Price	Ship.
2345	**301P**	Medium Mag-mount 3/8"x24	$25.40	**$19.95**	(+$3)
2346	**401P**	Large Mag-mount 3/8"x24	31.70	**24.95**	(+$3)
2354	**CX-144**	5/8 Wave 2 Meter Base-loaded Mobile Ant.	17.90	**14.95**	(+$3)
2360	**CX-5814**	2 Meter Combo 1/4 & 5/8 Wave Mobile Ant.	45.90	**34.95**	(+$4)
0434	**GM270**	2m/ 70cm On the Glass Mobile Ant.	59.95	**34.95**	(+$4)
3203	**MM144B**	2m Mobile Mag-mount Ant. With BNC	42.60	**29.95**	(+$4)
3205	**MM270B**	2m/ 70cm Mobile Mag-mount Ant. With BNC	56.60	**39.95**	(+$4)
2347	**PAM**	Medium Mag-Mount Motorola Style	28.50	**24.95**	(+$3)
1029	**PAQ-M**	Compact 2 Meter Mag-Mount With BNC	22.90	**19.95**	(+$3)
1490	**PAS**	3/4" Hole Mount Motorola Style	19.90	**12.95**	(+$3)
2352	**VAA-002**	1/4 Wave 2 Meter Mobile Ant. With PL-259	23.90	**18.95**	(+$4)
2356	**VAA-002BN**	1/4 Wave 2 Meter Mobile Ant. With BNC	27.90	**21.95**	(+$4)

MOBILE TRI-BAND ADAPTER

Made of heavy gauge stainless steel, the Universal Mobile Tri-band antenna adapter will permit you to operate any three HF bands (10 - 80 meters) without changing coils or making any modifications to your antenna. This, ***the original*** Tri-Band Adapter, is compatible with all mobile antennas and this adapter comes complete with all necessary hardware for a quick and easy installation.
Tri-Band *Order #0726* **$5.95** (+$2)

NI8F HF DIPOLES

NI8F dipoles are constructed with 14 gauge stranded copper clad wire combined with Budwig Hye-Que center and end insulators for strength and durability. These high quality dipoles are pre-assembled for ease of installation (with your coax and PL-259 connectors). They are easily adjustable for low SWR in the portion of the band you wish to operate.

10 Meters	*Order #3062*	**$24.95** (+$4)
15 Meters	*Order #0891*	**25.95** (+$4)
20 Meters	*Order #0793*	**26.95** (+$4)
40 Meters	*Order #0724*	**27.95** (+$4)
80 Meters	*Order #0643*	**29.95** (+$5)

FRITZEL

FD4 & FD4 2KW

These high-quality, German made, coax-feed dipoles cover: 80, 40, 20, 17, 12 and 10 meters.
FD4 (500w) *Order #3357* **$ 99.95** (+$6)
FD4 2K (2000w) *Order #3358* **139.95** (+$8)

FRITZEL

FD3

This high-quality, German made, coax-feed dipole covers: 40, 20 and 10 meters. The FD3/4 series are coax fed Windom antennas.
FD3 (500w) *Order #3443* **$79.95** (+$6)

HAM EQUIPMENT PRICES

Amateur equipment manufacturers frequently run coupons, rebates or promotions causing frequent price changes.

Please call Universal toll-free at:
1 800 431-3939

to check the latest prices on ham equipment.

Larsen Antennas

NMO-150

5/8 wave 2 meter mobile antenna. Frequency: 144 to 148 MHz Gain: 3.0 dB. Mount: Motorola.
List $30.70 *Order #0850* **$27.95** (+$4)

NMO-150B

Same as above but with black coil and whip.
List $33.20 *Order #1792* **$29.95** (+$4)

NMO-2/70

Dual-band mobile antenna. Frequency: 144 to 148 and 440 to 450 MHz Gain: 2.4 dB (2 meters) 4.0 dB. (70cm). Mount: Motorola style.
List $48.50 *Order #2852* **$39.95** (+$4)

NMO-220

5/8 wave 220 MHz mobile antenna. Gain: 3.0 dB. Mount: Motorola style.
List $30.00 *Order #1266* **$24.95** (+$4)

NMO-440

Collinear 5/8 over 1/2 wave UHF mobile antenna. Gain: 5.0 dB. Mount: Motorola style.
List $29.30 *Order #1270* **$26.95** (+$4)

NMO-Q

1/4 wave 2 meter mobile antenna.
List $13.70 *Order #1067* **$11.95** (+$3)

NMO-QB

Black 1/4 wave 2 meter mobile antenna.
List $17.00 *Order #0764* **$14.95** (+$3)

KG2/70

Black 1/2 wave 2 M/440, 36.25" mobile antenna.
List $89.52 *Order #1838* **$69.95** (+$4)

BENCHER, INC.

YA-1

High-power Low Pass filter. Frequency: 1.8 to 29.7 MHz. Power Rating: 1500 watts continuous, 5000 watts peak. Attenuation: >80 dB at 54 MHz.
List $64.95 *Order #1231* **$54.95** (+$4)

ZA-1A

1: 1 ratio balun for dipole antennas. Matches 50-75 ohm coax lines to 50-75 ohm load. Frequency: 3.5 to 30 MHz Power Rating: 5000 watts peak.
List $39.95 *Order #0461* **$34.95** (+$3)

020-001

Low-Pass filter. Power Rating: 2000 watts continuous, 5000 SSB. Attenuation: >65 dB.
List $49.00 *Order #2018* **$43.95** (+$3)

KD4-136ST

Compact 2 meter Kulduckie® for Icom handhelds.
List $17.30 *Order #1341* **$15.95** (+$3)

KD4-146

2 meter Kulduckie® antenna.
List $17.30 *Order #1343* **$15.95** (+$3)

KD4-146HQ

Helical ¼ wave Kulduckie® for 2 meter HT's.
List $21.50 *Order #1075* **$19.95** (+$3)

KD4-445

UHF Kulduckie® antenna for 440-450 MHz HT's.
List $17.30 *Order #1765* **$13.95** (+$3)

KD4-2/70

Dual-band Kulduckie® antenna. Frequency: 144 to 148 and 440 to 450 MHz.
List $27.00 *Order #1569* **$21.95** (+$3)

KD14-2MHW

High-performance telescopic ½ wave Kulduckie® antenna for 2 meter HT's.
List $33.80 *Order #2212* **$29.95** (+$3)

KD14-440HW

UHF ½ wave Kulduckie® antenna for 440 to 450 MHz HT's.
List $33.80 *Order #2213* **$29.95** (+$3)

Mounts & Accessories

Order #	Model	Item Description	List Price	Your Price	Ship.
2903	**AD 2/70**	Duplexer for 2 Meter and 70 cm	$69.20	**$52.95**	(+$4)
2182	**BNC-MM**	Mag-mount With BNC Connectors Both Ends	39.00	**29.95**	(+$4)
1039	**NMO-CAP**	Rain Cap for NMO Type Mounts	3.30	**2.99**	(+$2)
1274	**NMO-K**	3/4" Hole NMO Style Mount	13.50	**11.95**	(+$3)
0467	**NMO-MMR**	Round Mag-Mount for NMO Antennas	32.50	**24.95**	(+$4)
1277	**NMO-TLM**	Trunk Lip Mount for NMO Antennas	26.50	**21.95**	(+$4)
0598	**PO-K**	3/4" Hole Mount for PO (SO-239) Ant.RG-58	24.00	**19.95**	(+$3)
2685	**PO-MM-R**	Mag-Mount for PO (SO-239) Ant.RG-58	40.70	**29.95**	(+$4)
2686	**PO-TLM**	Trunklip Mount for PO Style Antennas	27.30	**19.95**	(+$3)
1077	**TMB-34**	Stainless Steel "L" Mount With 3/4" Hole	4.70	**3.95**	(+$2)

Van Gorden

HI-Q 1:1

1:1 ratio for dipole antennas. Frequency: 3 to 40 MHz. Power Rating: 1500 watts.
Order #1019 **$14.95** (+$3)

HI-Q 4:1

4:1 ratio for dipole antennas. Frequency: 3 to 40 MHz. Power Rating: 1500 watts.
Order #0064 **$14.95** (+$3)

HI-Q Center Insulator

Compact center insulator for dipole antennas.
Order #2362 **$6.95** (+$3)

HI-Q Large End Insulators

These big 6.375" end insulators are great for longer dipoles and other antenna projects. **(Pkg. of 2)**
Order #2873 **$4.95** (+$3)

Valor "The Clear Connection"

Valor announced a new line of premium amateur antennas as we went to press. Watch for further technical details on this new line in our next catalog.

UNADILLA

W2AU-AN

Center insulator for wire dipole antennas.
List $9.00 *Order #0913* **$8.95** (+$3)

W2AU-1:1

1: 1 ratio balun for dipole antennas. Matches 50-75 Ohm coax lines to 50-75 Ohm load. Frequency: 1.8 to 40 Mhz. Power Rating: 2000 watts PEP.
List $24.00 *Order #2076* **$20.95** (+$3)

W2AU-4:1

As above, but with 4:1 ratio.
List $24.00 *Order #1888* **$20.95** (+$3)

W2DU HF

Maxi-Balun 1:1 ratio for dipole antennas. Frequency: 1.8 to 30 MHz Power Rating: 5000 watts.
List $26.00 *Order #2452* **$23.95** (+$3)

KW-40

40 meter traps for constructing multi-band dipole antennas. Frequency: 7.150 MHz Power Rating: 2000 watts. (Pair)
List $42.00 *Order #0517* **$38.95** (+$3)

Order #	Model	Item Description	Your Price	Ship.
3472	**PR2000**	2M Non-Radial High-Gain Mobile Antenna	**$29.95**	(+$6)
3473	**PR2000C**	2M Non-Radial High-Gain Mobile Antenna	**39.95**	(+$7)
3474	**PR7000**	440 Non-Radial High-Gain Mobile Antenna	**28.95**	(+$6)
3475	**PR7000C**	440 Non-Radial High-Gain Mobile Antenna	**37.95**	(+$6)
3476	**PR2070**	2M/440 High-Gain Mobile Antenna	**29.95**	(+$6)
3477	**PR2070R**	2M/440 Non-Radial High-Gain Mobile Antenna	**39.95**	(+$7)
3478	**PR2070H**	2M/440 Non-Radial High-Gain Mobile Antenna	**39.95**	(+$7)

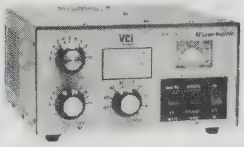
JRC

JRL-2000F

The Japan Radio Company **JRL-2000F** is the world's first MOSFET HF linear amplifier, designed using the same high technology found in Japan Radio Company's professional high-powered radio transmitters. The power amp incorporates 48 RF power MOSFETs to ensure low distortion and clean output, plus a high-speed automatic antenna tuner with a 1820 channel memory. In addition, a high efficiency switching power supply with a PFC to suppress AC line currents, an automatic antenna selector and a wireless remote control are among the JRL-2000F's many user-friendly features. 100 watt drive for 1 kW. We urge you to contact us to receive a color brochure on this most impressive device. All JRC amateur and shortwave radio products carry a one year limited warranty.
List $4899.00 *Order #0866* **$4199.00** (+ship)

VCi VECTRONICS

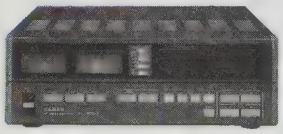
HF600-QSK



The Vectronics LP-30 is a one stage class AB2 linear amp using an Amperex 8802 power triode tube. It is a completely self-contained table-top unit capable of 1000 watts PEP output, designed to provide reliable, stable, RF output power. It is equipped with a pressurized plenum cooling system to ensure optimum operation during extended periods of continuous use. The circuit and components are designed for efficient operation under all conditions. For use from 1.8 to 24 MHz.
List $1995.00 *Order #3386* **$1549.00** (+ship)

YAESU

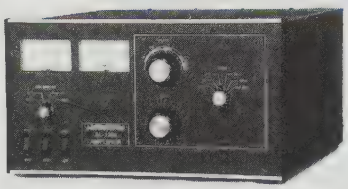
FL-7000



This microprocessor-controlled all solid state HF linear amplifier features a built-in power supply, automatic antenna tuner, full break-in CW, and automatic band change when used with Yaesu transceivers equipped with digital band data output. Frequency: 1.8, 3.5, 7, 10, 14, 18 and 21 MHz bands. Drive power: 70 watts or more for full output. RF Input power: SSB-1200 watts PEP, CW and RTTY-1200 watts DC. Power requirements: 110/120VAC, 220/240VAC. Power consumption: 1900VA maximum. Weight: 66 Lbs.
List $2459.00 *Order #1178* **$2099.95** (+ship)

AMERITRON

AL-1200



Enjoy 1500 watts in all modes on: 15, 20, 40, 80 and 160 meters. 100 watts drive for full output. Requires: 240VAC 15A. Weight: 77 Lbs. (88 Lbs ship in 3 boxes).
List $2195.00 *Order #1063* **$1899.95** (+ship)

AL-1500

The AL-1500 uses a *3CX1500* tube to deliver 1500 watts CW with as little as 65 watts drive on 15, 20, 40, 80 and 160 meters. Requires 240VAC 15A. Weight: 77 Lbs. (88 Lbs ship in 3 boxes).
List $2695.00 *Order #3037* **$2349.95** (+ship)

AL-811A

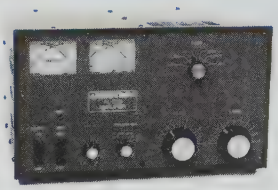
This amp uses three tough *811A* tubes to give you 600 watts of PEP output. 13.75"W x 8.65"H x 16"D. Weight: 31 Lbs. (40 Lbs ship).
List $649.00 *Order #1883* **$629.95** (+ship)

AL-811H

Like the AL-811A, but with four fully neutralized tubes for 800 watts.
List $799.00 *Order #2902* **$769.95** (+ship)

Universal will modify the Ameritron HF linear amplifiers for 10 meter operation at the time of purchase, with proof of your Amateur radio license, for $20.

AL-80B



The AL-80B combines a single *Eimac 3-500* power tube with a heavy-duty tank circuit for up to 70% plate efficiency. Frequency: 15, 20, 40, 80 and 160 meters. Drive power: 85 watts for full output. RF Input power: SSB-1000 watts PEP, CW-850 watts. Power requirements: 120VAC 15A, 240VAC 7.5A. Weight: 48 Lbs. (58 Lbs ship).
List $1195.00 *Order #0575* **$1099.95** (+ship)

AL-82

This new HF linear amplifier from Ameritron uses a pair of *Eimac 3-500* power tubes for full legal output power. Frequency: 15, 20, 40, 80 and 160 meters. Drive Power: 100 watts for full output. Requires: 240VAC 15A. Weight: 77 Lbs. (91 Lbs ship in 3 boxes).
List $2095.00 *Order #2889* **$1849.95** (+ship)

ALS-600

This revolutionary amp is amateur radio's *only* linear amplifier that uses four rugged TMOS RF power FETs yielding unequaled no tune solid state performance. Output power is 700 watts PEP with continuous coverage from 1.5 to 22 MHz. Includes amplifier and 120/220 VAC power supply.
List $1299.00 *Order #1760* **$1199.00** (+ship)

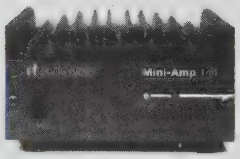
MIRAGE

Mirage VHF/UHF amplifiers are designed for rugged reliable all-mode operation. There is a model offered for any portable or fixed station installation.

Ant connector types: B=BNC, U=UHF, N=N.

Order #	Model	Band	In W	Out W	Mode	Pre	Ant	Required Power	List	Your Price
2671	**BD35**	2 M/440	4	45/35	FM	No	U	12VDC at 6A	$199.00	**$179.95** (+$6)
3469	**B34**	2 Meter	2	35	FM	No	U	12VDC at 5A	79.00	**74.95** (+$5)
3468	**B34G**	2 Meter	2	35	MM	Yes	U	12VDC at 5A	99.00	**93.95** (+$5)
1481	**B310G**	2 Meter	8	100	MM	Yes	U	12VDC at 15A	199.00	**179.95** (+$6)
2173	**B215G**	2 Meter	2	150	MM	Yes	U	12VDC at 25A	379.00	**329.95** (+$6)
0427	**B1016G**	2 Meter	10	160	MM	Yes	U	12VDC at 25A	379.00	**329.95** (+$6)
0428	**B2516G**	2 Meter	25	160	MM	Yes	U	12VDC at 22A	299.00	**279.95** (+$6)
0433	**D26N**	70 cm	2	40	MM	Yes	N	12VDC at 5A	269.00	**249.95** (+$7)
0435	**D1010N**	70 cm	10	100	MM	Yes	N	12VDC at 20A	395.00	**369.95** (+$7)
2756	**D3010N**	70 cm	30	100	MM	Yes	N	12VDC at 20A	365.00	**339.95** (+$7)

rfconcepts



If you are looking for powerful, rugged VHF/UHF all-mode amplifiers check out this new line from RF Concepts. Most of these amps feature GaAs-Fet receive preamps and high-SWR shutdown protection.

Order #	Model	Band	In W	Out W	Preamp	Ant	Required Power	List	Your Price
2804	**2/70G**	2 M/440	5	30	Yes	B	12VDC at 4A	$289.95	**$249.95** (+$6)
2714	**Mini 144**	2 Meter	3	30	No	U	12VDC at 5A	119.95	**109.95** (+$5)
1624	**Mini 144P**	2 Meter	3	30	Yes	U	12VDC at 5A	129.95	**119.95** (+$5)
0264	**Mini 440**	70 cm	2	20	No	U	12VDC at 5A	129.95	**119.95** (+$5)
3064	**Mini 440P**	70 cm	2	20	Yes	U	12VDC at 5A	159.95	**149.95** (+$5)
3083	**4-110**	70 cm	10	100	Yes	N	12VDC at 22A	399.95	**369.95** (+$7)
2660	**4-310**	70 cm	30	100	Yes	N	12VDC at 20A	369.95	**349.95** (+$7)

HIGH PASS FILTERS

HP-300T

HP-75T

These high-pass filters connect to your TV or VCR to help reduce radio interference from CB or ham radio operators. Each filter has 9 shielded sections, a sharp cut-off at 52 MHz and over 80 dB attenuation below 50 MHz. (These items are not returnable).

The **HP-300T** version is for 300 ohm twin-lead installations. With screw terminals and 300 ohm lead. (Shown at the top above).
Ameco HP-300T *Order #2915* **$12.95** (+$3)

The **HP-75T** version is for coax feedline and is ideal for cable TV systems. With connector and short coax jumper cable (F to F).
Ameco HP-75T *Order #2914* **$12.95** (+$3)

The Pouch

Constructed of resilient neoprene and nylon, the Pouch offers excellent protection for your HT.

Pouch Super Small SS (6" High 6.375" Girth)
For: 2SAT/P2AT, TH27/45A, FT415
Order #3034 **$14.95** (+$2)

Pouch Short S1 (6" High 7.375" Girth)
For: µ2AT/2GAT, TH21AT, FT23/33/411E
For: TH28/48/77, DJ580 with small battery
Order #1591 **$14.95** (+$2)

Pouch Short S2 (7" High 7.375" Girth)
For: C188/288/488/558, FT530,W2, 24AT
For: DJ180/580 with big battery
Order #1016 **$14.95** (+$2)

Pouch Slim X (9" High)
For: 24AT/W2A/4SRA with long batteries
Order #0129 **$14.95** (+$2)

Pouch Generic G (7.75" High 7.75" Girth)
For: 460/560T, 2AT/02AT/32, TH215/225
Order #0747 **$14.95** (+$2)

Pouch Long L (9.25" High 7.75" Girth)
For: Generic HTs above with long batteries.
Order #1642 **$14.95** (+$2)

QRZ! HAM RADIO CD ROM

The QRZ! Ham Radio CD ROM contains listings for 935,764 callsigns, names and addresses for hams in the USA and abroad. Locate any callsign in under two seconds! Plus you get over 7000 shareware files covering all facets of amateur radio such as: radio modifications, Morse training, contest logging, TCP/IP software and more. For DOS/Windows/Mac/Unix. *Walnut Creek.*
List $29.95 *Order #0524* **$19.95** (+$3)

◆ Please see page 80 for more CD's.

VCI VECTRONICS

DL-300M

The Vectronics DL-300M dry dummy load simulates an accurate 50 ohm antenna up to 150 MHz at 300 watts (ten seconds). 5"x2"x3".
List $34.95 *Order #3390* **$32.95** (+$3)

DL-650M

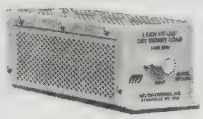
The DL-650M dry dummy load is rated at 1500 watts up to 650 MHz (VSWR 1.3 : 1 at 500 MHz).
List $64.95 *Order #3391* **$54.95** (+$4)

LP-30 & LP-2500

The Vectronics LP-30 low pass filter is used between your transmitter and antenna, or tuner. Power capacity is 1500 watts continuous. Passband is 0 - 30 MHz. Cutoff is 35 MHz. 52 Ohms.
List $49.95 *Order #3388* **$44.95** (+$5)

The model LP-2500 is similar to the above, but with 2500 watts capacity.
List $79.95 *Order #3389* **$69.95** (+$6)

MFJ 264



This dry dummy load will handle 1500 watts for ten seconds or 100 watts for ten minutes. SWR is better than 1.3 : 1 up to 650 MHz.
List $59.95 *Order #2256* **$54.95** (+$3)

260B

This 50 ohm air-cooled 300 watt dry dummy load will handle a full load for thirty seconds to 30 MHz at 1.1 : 1 or 150 MHz at 1.5 : 1.
List $29.95 *Order #1314* **$27.95** (+$3)

QSL CARD HOLDERS

These heavy-weight clear vinyl holders are perfect for protecting and displaying those prized QSL cards on your wall. The two card holders per package will each display twenty cards.
QSL Holder *Order #0719* **$4.99** (+$2)

◆ Please see page 75 for more ham accessories.

HEIL SOUND

Break through the DX pileups! For the DX and contest operators the HC-4 mic element is the proven performer. Icom owners can improve speech clarity with the HC-5 mic element.
When ordering a Heil microphone you must specify the radio type and mic element type.

HC-4

This element is ideal for DX and contest work.
List $29.95 *Order #2775* **$26.95** (+$3)

HC-5

This element improves speech clarity for Icom.
List $29.95 *Order #2585* **$26.95** (+$3)

HM-10

Studio quality microphone (specify HC-4 or HC-5).
List $89.95 *Order #1893* **$79.95** (+$3)

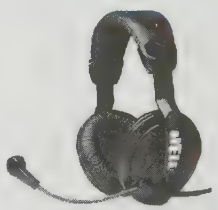
DUAL TEN

HM-10 mic with both the HC-4 and HC-5 elements.
List $138.95 *Order #2109* **$119.95** (+$4)

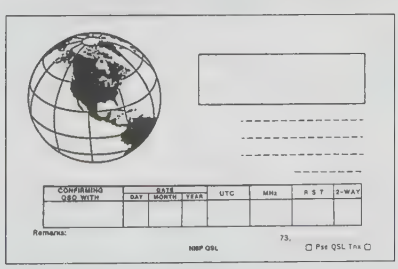
FS-1

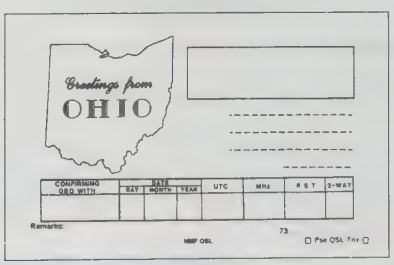
Footswitch with 7 foot cable and ¼" phone plug.
Order #0740 **$24.95** (+$3)

PRO SET



The new Heil boomset is a favorite with DXers and contesters. The headband is fully adjustable and the mic boom is flexible. Specify radio.
Order #1641 **$119.95** (+$6)





QSL CARDS

Ohio QSL *Order #2350* **$3.95** (+$2)

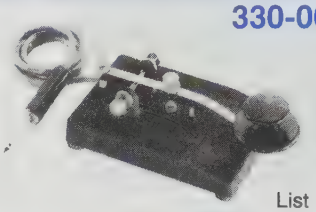
Globe QSL *Order #1116* **$3.95** (+$2)

These high-quality blank QSL cards are printed on heavy 65# parchment stock and are offered in an assortment of colors. Provisions for all pertinent information is provided on the front side for your convenience. **Pkg. of 100 QSLs.**

Nye Viking offers the CW enthusiast an extensive line of quality straight keys, all featuring gold-plated heavy silver contacts, adjustable key action and heavy die-cast bases.

310-003

330-001



Order #	Model	Item Description	List	Your Price	Ship.
1365	**300-002**	Black painted heavy steel base only (no key)	$17.00	**$13.95**	(+$2)
0797	**310-001**	Nickel plated key on black oval base.	28.40	**21.95**	(+$3)
1368	**310-003**	Nickel plated key on black oval base *with Switch.*	33.50	**27.95**	(+$3)
2266	**312-001**	Brass plated key on black oval base.	28.60	**22.95**	(+$3)
0188	**312-003**	Brass plated key on black oval base *with Switch.*	33.50	**27.95**	(+$3)
1245	**315-001**	Polished brass plated oval key on steel base.	57.00	**46.95**	(+$4)
0853	**315-003**	Polished brass plated oval key on steel base *with Switch.*	63.95	**54.95**	(+$4)
2302	**320-001**	Nickel plated key on black rectangular base.	31.00	**24.95**	(+$3)
1369	**320-003**	Nickel plated key on black rectangular base *with Switch.*	36.00	**29.95**	(+$3)
1370	**322-001**	Brass plated key on black rectangular base.	31.00	**24.95**	(+$3)
0522	**322-003**	Brass plated key on black rectangular base *with Switch.*	36.00	**29.95**	(+$3)
1371	**330-001**	Black "Master Key" with cable and heavy steel base.	65.00	**49.95**	(+$4)
2831	**404-001**	Code Practice Set (without key).	24.50	**19.95**	(+$3)
1378	**404-002**	Code Practice Set with 310-001 key.	51.80	**41.95**	(+$4)

AMECO

The **Ameco OCM2W** code practice oscillator has a speaker and connectors for headphones and code key.
Order #0545 **$24.95** (+$3)

The **Ameco TK-1** is an economical practice code key with plastic base.
Order #3021 **$9.95** (+$2)

The **Ameco TK-4** key has an oval brass-plated base, ball-bearing movement and shorting bar.
Order #3022 **$14.95** (+$3)

BENCHER, INC.

BY-2

Bencher paddles include gold-plated solid silver contact points.

Order#	Model	Item Description	List Price	Your Price	
0458	**BY-1**	Iambic Black	$84.95	**$74.95**	(+$4)
0459	**BY-2**	Iambic Chrome Plated	99.95	**84.95**	(+$4)
0460	**BY-3**	Iambic Gold Plated	299.95	**259.95**	(+$6)
3258	**BY-4**	Iambic Black & Gold	169.95	**149.95**	(+$5)
3218	**RJ-1**	Hand Key Black	81.95	**69.95**	(+$4)
3219	**RJ-2**	Hand Key Chrome Plate	94.95	**84.95**	(+$4)
0006	**ST-1**	Straight Black	84.95	**74.95**	(+$4)
0559	**ST-2**	Straight Chrome Plated	99.95	**84.95**	(+$4)

MFJ

422C

This deluxe keyer fits directly over a Bencher BY-1 paddle for a compact configuration. It is built around the proven Curtis 8044 ABM IC , the 422 features adjustable weight, tone, speed and volume. This keyer is available in combination with the BY-1 or separate for installation on your BY-1. Requires 9V battery (or MFJ-1305 *#3223* $12.95)

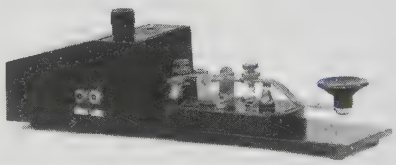
422C

Keyer and Bencher BY-1 combination.
List $134.95 *Order #0804* **$124.95** (+$4)

422CX

Keyer **only** for installing on your BY-1 paddle.
List $79.95 *Order #1119* **$74.95** (+$3)

557



Deluxe code practice oscillator with straight key mounted on a heavy steel base. Requires 9V batt.
List $24.95 *Order #0555* **$23.95** (+$3)

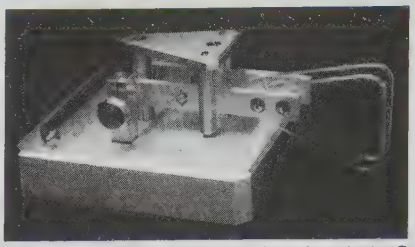
401C

The Econo Keyer II uses the Curtis 8044 ABM IC for iambic, automatic, semi-automatic or manual keying with your favorite paddles. Reqs. 9V batt.
List $49.95 *Order #0325* **$46.95** (+$3)

407C

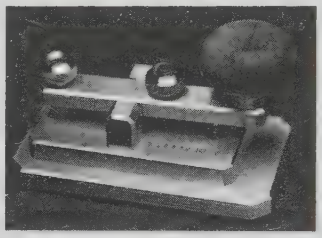
Same features as the 401C plus front-panel mounted controls for speed, weight, tone and volume. Requires 9V battery.
List $69.95 *Order #1324* **$64.95** (+$3)

SCHURR

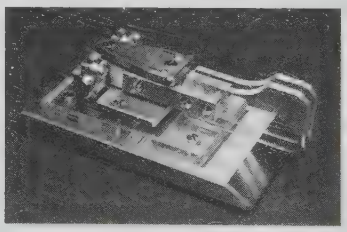


This solid brass iambic key is handmade in Germany. It comes complete with a dust cover and three conductor cable. A true collector's piece.
Schurr 01 Profi *Order #3231* **$229.95** (+$6)

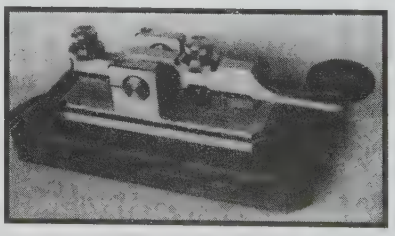
This small solid brass straight key is a marvel of machining. The wood knob may be cherry or mahogany. Handmade in Germany.
Schurr 40 MMK *Order #3244* **$199.95** (+$5)



This mini solid brass straight is made in Germany.
Schurr 45 Mini *Order #3366* **$169.95** (+$5)



A beautiful mini iambic. The Portable Wabbler is great for the travelling ham. About 25% smaller than the Profi. Shown without supplied dust cover.
Schurr P.Wabl. *Order #3365* **$219.95** (+$5)



A gorgeous brass full size straight key on a solid mahogany wood base. For the discriminating operator or collector. Handmade in Germany.
Schurr 50 MSK *Order #3232* **$279.95** (+$7)

W5YI Group

NO-CODE EDUC. SOFTWARE

Study for your *No-Code Technician* license right at your *PC*. Review all questions, print out sample tests or take exams administered at your keyboard. Works with any printer. Easy to learn and use. Just follow the menu and you are on your way to earning your No-Code license. Many neat features including sound effects. Includes *Ham Radio Handbook*. With both 3½" and 5¼" disks.

NCS/S *Order #2878* **$27.95** (+$3)

HAM OP. EDUC. SOFTWARE

This comprehensive educational software covers both the code and written tests for every amateur radio license Novice through Extra including the No-Code Tech. Review all 2000 actual questions, take practice exams, etc. Contains both 3½" and 5¼" *PC* compatible disks. Includes Part 97 Rules.

HOS *Order #1593* **$37.95** (+$3)

HAM RADIO VIDEO COURSE

Learn how to be a licensed ham radio operator by watching this 88 minute video seminar. This easy-to-follow training course teaches what you need to know to get your FCC *No-Code Technician* ticket. This video covers FCC regulations, operating procedures, radio propagation, electronic principles, station equipment, radio propagation, practical circuits, signals and emissions, antennas and feedlines. Available in VHS format only. Produced by W5YI and FMV Video Productions.

NCVS *Order #2848* **$21.95** (+$3)

NEW NO CODE PLUS

This book, written by the world famous author and teacher Gordon West, prepares you to quickly and painlessly earn your no-code Technician license.

GWNC+ *Order #0347* **$9.95** (+$2)

HAM LICENSE MANUALS

These excellent license manuals by West can help you get your first ticket or upgrade quickly.

General Class	*Order #3369*	**$9.95** (+$2)
Advanced Class	*Order #0062*	**$11.95** (+$2)
Extra Class	*Order #3256*	**$11.95** (+$2)

AMECO MORSE CODE PC COURSE

Learn code the fun way - on your PC! Generates random characters, numbers, punctuation and QSO's at any speed or tone. On both 3 & 5" disks.

107 PCv2 *Order #2327* **$29.95** (+$3)

CODEMASTER TAPES

Novice CM-1	*Order #2126*	**$12.95** (+$2)
General CM-1½	*Order #2127*	**$12.95** (+$2)
Extra CM-2	*Order #2128*	**$12.95** (+$2)

The shortwave spectrum is filled with Morse code signals (CW). Many DXers have found it desirable to attain at least a minimal working knowledge of Morse Code in order to identify these signals. We sell a variety of Morse tutorial tapes at Universal, and feel that the Code Master series is the best. This two cassette package is well narrated and easy to understand (includes transcript). It uses five letter groups to quickly take the listener to 8 WPM proficiency. Also great for those working towards the Novice amateur license! The Novice CM-1 covers 5-9 WPM. The CM-1½ covers 11-17 WPM, and the CM-2 covers 20-30 WPM.

Now You're Talking 2nd Edit. is published by the American Radio Relay League and covers everything you need to know to earn your first amateur radio license. More than a study guide; it will help you select equipment for your ham station and explain how to set it up -- everything you'll need to know to get on the air! This book is a complete introduction to the exciting world of ham radio. ©1993 *ARRL*.

Now Talk II *Order #1780* **$18.95** (+$2)

YOUR INTRO. TO MORSE

These two 90 minute cassette tapes will teach you to copy the Morse code so you can pass the 5 WPM code exam for either novice or technician class. The Morse code characters are recorded at 18 WPM, but the spacing is increased to slow overall code speed to 5 WPM. With practice exams. *ARRL*

Intro Morse *Order #1082* **$10.00** (+$2)

CODE PRACTICE CD

If you can now copy 13 WPM, and wish to increase your code speed, this special set of two audio CDs is what you need. Over 2½ hours. *ARRL*.

CD 15-22 WPM *Order #1267* **$12.00** (+$3)

CODE PRACTICE TAPES

The ARRL code practice cassettes provide 3 hours of practice with words, sentences, random code groups, text and practice QSO's. Each set consists of two 90 minute cassette tapes.

Set 1 (5-10 WPM)	*Order #0477*	**$9.95** (+$2)
Set 2 (10-15 WPM)	*Order #0678*	**$9.95** (+$2)
Set 3 (15-22 WPM)	*Order #2683*	**$9.95** (+$2)
Set 4 (13-14 WPM)	*Order #2997*	**$9.95** (+$2)

HAM LICENSE MANUALS

The ARRL License Manuals provide the appropriate amateur examination question pool, complete with answer key.

Technician Class	*Order #1859*	**$6.00** (+$2)
General Class	*Order #1326*	**$12.00** (+$2)
Advanced Class	*Order #1759*	**$12.00** (+$2)
Extra Class	*Order #1182*	**$12.00** (+$2)

"SAM" MORSE TUTOR

This Morse code tutor program for *PC* computers, gives you random characters, text, prosigns and random QSO's. It makes learning the code fun. On 5¼" diskette.

MFJ-1269 *Order #1235* **$19.95** (+$3)

AMECO HAM LICENSE MANUALS

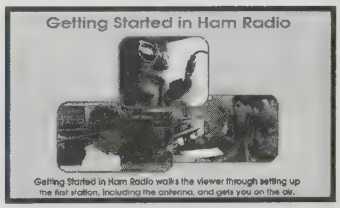
These manuals contain the exact questions and multiple-choice answers (correct answers provided) that are on the FCC amateur VEC tests:

Novice Class	*Order #2403*	**$5.95** (+$2)
Technician Class	*Order #2063*	**$5.95** (+$2)
Codeless Tech.	*Order #0049*	**$9.95** (+$2)
General Class	*Order #2055*	**$9.95** (+$2)
Advanced Class	*Order #2056*	**$9.95** (+$2)
Extra Class	*Order #2057*	**$5.95** (+$2)

MASTERING THE MORSE CODE

By M. Schwartz. This booklet offers useful advice on learning the code. ©1987 *Ameco* 31 p.

Master Morse *Order #2058* **$2.50** (+$1)


Getting Started in Ham Radio
Getting Started in Ham Radio walks the viewer through setting up the first station, including the antenna, and gets you on the air.

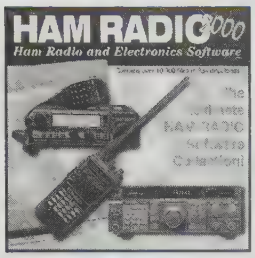
The folks at *CQ* magazine have created an exciting series of video tapes. Each topic is professionally presented in a simple but informative fashion. Each 50 minute VHS tape will educate and entertain you. A great way to learn ham radio!

Start Ham Radio	*Order #3137*	**$19.95** (+$3)
DX'ing	*Order #3135*	**$19.95** (+$3)
Packet Radio	*Order #3134*	**$19.95** (+$3)
Amateur Satellites	*Order #3136*	**$19.95** (+$3)
Contesting	*Order #2642*	**$19.95** (+$3)
VHF	*Order #3303*	**$19.95** (+$3)

KENWOOD EZ-PASS

As we go to press, Kenwood has just announced a new software training package for those aspiring to a No-Code Tech License.

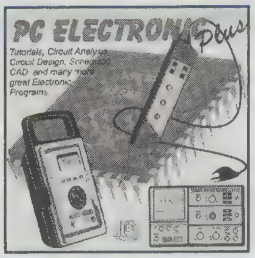
EZ-Pass Win.95	*Order #3158*	**$29.95** (+$3)
EZ-Pass DOS	*Order #3159*	**$29.95** (+$3)



HAM RADIO 2000

This may be the ultimate Ham radio software collection. Over 10,000 files in 934 directories are included. All files are uncompressed and most can run right off the CD. Search for text in title or description through the entire CD! All topics from Antennas to WEFAX. For: Win3.x/Win95. ©1997

Order #2313 ..... $14.95



PC ELECTRONICS PLUS VOLUME 1

This CD will assist anyone currently working in or pursing the field of electronics. Programs include: A-Filter, Circuit CAD, DC Cad, DC Circuit Analysis, EEDRAW, ELECALC, Electronics Circuit Designer, Electronic Tool Box, MicroCAD, PC-Schematic, PCTrace, RF Amp and more. For: DOS

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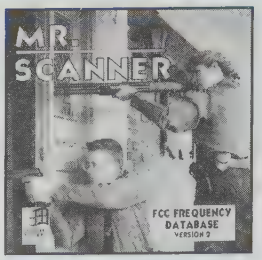
PC ELECTRONICS Plus
Volume 2
Tutorials, Circuit Analysis, Circuit Design, Schematics CAD, and many more great Electronic Programs
All NEW Program Collection! for '97

PC ELECTRONICS PLUS VOLUME 2

This new program selection for 1997 includes: ASP Amp Simulation, Meter Challenge, LECAD Circuit CAD, LoKon for Windows, Oscilloscope Tutor, Proto CAD 3D, Resolve Schema CAD, Panel for Windows and many more programs for Windows. For: Win3.x/Win95/DOS.

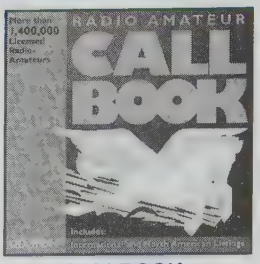
Order #0846 ..... $14.95



MR. SCANNER's FCC FREQUENCY DATABASE

The database of choice for the scanner listener. Includes: PD, FD, RR, Marine, Wx, Space, Air, Paging, Utilities and much more. It is very fast and you can export data to ASCII or DBASE by State, City, County or Service. Version 2. Requires no setup. For: Win3.x/Win95.

Order #3376 ..... $29.95



CALLBOOK CD

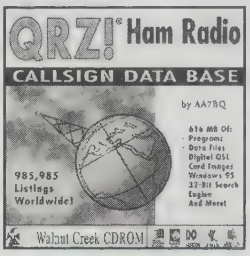
This CD of more than 1,400,000 licensed hams includes International and North American listings. Data display by callsign, name, street, zip, license class, issue and expiration, etc. Powerful search and label features plus 54,000 QSL managers. For: Windows/DOS.

Order #3001 ..... $49.95

QST VIEW

Now, for the first time, back issues of *QST* are available in convenient, space-saving CD-ROM format. Each page, - all articles, ads, columns and covers - has been scanned to provide a black and white image that can be read on your computer screen or printed. Search by titles and authors too. *ARRL*. For: Win3.x/Win95. Requires 14 Mb of HD and 8 Mb of RAM and mouse.

- **QST View CD 1970-1974**
  Order #3563 ..... $39.95
- **QST View CD 1975-1979**
  Order #3562 ..... $39.95
- **QST View CD 1980-1984**
  Order #3561 ..... $39.95
- **QST View CD 1985-1989**
  Order #3560 ..... $39.95
- **QST View CD 1990-1994**
  Order #3559 ..... $39.95



QRZ! HAM RADIO CALLSIGN DATA BASE

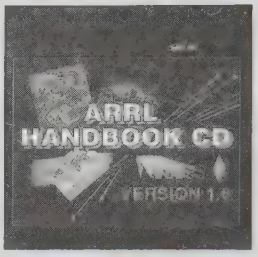
The QRZ callsign database brings 985,985 callsigns to your fingertips from stations throughout the world. Full databases for Austria, Brazil, Canada, Cuba, Israel, Italy, Mexico, Monaco, Portugal, Turkey and the U.K. are included. The latest FCC database for the USA is featured. Over 3,000 amateur radio programs are also included. For: Win3.x/Win95/DOS/UNIX/MAC OS. *Walnut Creek.*

Order #0524 ..... $19.95

GUIDE TO UTILITY STATIONS 1997

This best selling guide by Joerg Klingenfuss is now available on CD format. 13,800 shortwave frequencies, updated as of 12/96 are featured, plus 1160 abbreviations. You also get 11,500 entries with the latest schedules of all international shortwave broadcast services. Instantly browse and search for specific frequencies, station names, call signs, languages and countries. For: Win3.x/Win95.

Order #1808 ..... $34.95



ARRL HANDBOOK CD

The famous *ARRL Handbook* is now available in convenient, easy-to-use CD-ROM format. All text and illustrations are included plus a powerful search engine, audio clips, zooming controls and Windows printing and Clipboard support. *ARRL*. For: Win3.x/Win95. Requires 486 CPU, 6 Mb of HD, 8 Mb of RAM, soundcard & mouse.

Order #3558 ..... $49.95

ARRL 1995 PERIODICALS

Imagine all the 1995 issues of the ARRL's membership journal ***QST***, the monthly technical magazine ***QEX*** and the bimonthly ***National Contest Journal*** ... all on one handy CD-ROM. Includes a powerful search engine. *ARRL*. Requires Windows 3.1 or higher and 10 Mb of hard disk free space.

Order #3144 ..... $19.95

NOTE: Minimum hardware for most CDs is: 386 CPU, 4 or 8 MB RAM, VGA & Harddrive.

CD SHIPPING

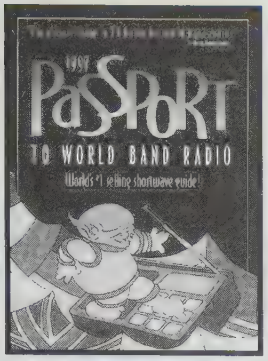
U.S.A. Customers: Please add $3 per CD for U.P.S. shipping.

Outside the U.S.A.: Please add $5 per CD for surface shipping.

Ramsey Kits

Ramsey offers a line of inexpensive kits for the radio hobbyist wanting to try their hand at "home-brewing". These kits require some knowledge of electronics and basic soldering skills. **All kits are warranted strictly by the manufacturer.** Universal Radio will not be responsible for the warranty on kit products.

Order #	Item	Description	Price
1269	**HR-20**	**20M Ham Receiver** tunes SSB, CW and RTTY	$29.95 (+$3)
0842	**HR-30**	**30M Receiver** tunes any 250 kHz between 9 & 13 MHz.	29.95 (+$3)
0888	**HR-40**	**40M Ham Receiver** tunes AM, CW and SSB	29.95 (+$3)
2255	**HR-80**	**80M Ham Receiver** tunes AM, CW and SSB	29.95 (+$3)
2582	**QRP-20**	**20M QRP Transmitter** 1 Watt Output	29.95 (+$3)
0104	**QRP-30**	**30M QRP Transmitter** 1 Watt Output	29.95 (+$3)
1703	**QRP-40**	**40M QRP Transmitter** 1 Watt Output	29.95 (+$3)
2650	**QRP-80**	**80M QRP Transmitter** 1 Watt Output	29.95 (+$3)
1590	**AR-1**	**VHF Aircraft Receiver** receives 110 to 136 MHz.	29.95 (+$3)
2188	**SR-1**	**Shortwave Receiver tunes** any 2 MHz from 4 to 11 MHz.	29.95 (+$3)
2264	**FTR-146**	**2M FM Transceiver** 4-6 watts, 6 channel	149.95 (+$4)
2874	**CW-7**	**Electronic CW Keyer** uses CMOS IC chips	24.95 (+$3)
1599	**P-IBM**	**Packet Radio TNC** for use with *IBM* type PCs.	59.95 (+$3)
2906	**CHR**	**Case** for Ham Receivers, includes front and back panels	14.95 (+$3)
2479	**CQRP**	**Case** for QRP Transmitters, includes front and back panels	14.95 (+$3)
0961	**CSR**	**Case** for Shortwave receiver with front and back panels	14.95 (+$3)



PASSPORT TO WORLD BAND RADIO

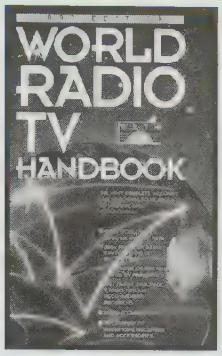
By L. Magne. A must have book for every worldband listener. Provides complete visual data on all SWBC stations from 2.3 to 26 MHz. See at a glance: station name, location, frequency, time, language and power. Plus candid hard-hitting reviews on SW radios. World's #1 selling SW guide. Indispensable! *IBS.* 528 p.

Order #1000 ..... $19.95

PASSPORT TO WEB RADIO

By L. Magne. Here is a new way to hear the world ... on your PC! Includes Introduction to Web Radio and Complete Idiot's Guide to Getting Started. Find the ultimate in sports coverage, along with every kind of music from hundreds of AM, FM and SW stations throughout the world. ©1997 *IBS.* 144 p.

Order #3000 ..... $19.95



WORLD RADIO TV HANDBOOK

Considered the SWL's *Bible* with schedules, frequencies and addresses of shortwave broadcast stations. Organized primarily by country. Also includes a by-frequency listing of shortwave broadcast stations. A publication for every shortwave listener. *Billboard.* 560 p. 1997 Edition.

Order #2000 ..... $24.95

SHORTWAVE RECEIVERS PAST & PRESENT

By F. Osterman. Your comprehensive guide to over 500 shortwave, amateur and commercial communications receivers manufactured in the last 50 years. With photos and information including: coverage, circuit type, display, features, performance, new & used value, reviews, etc. New Second Ed. 350 p ©1997.

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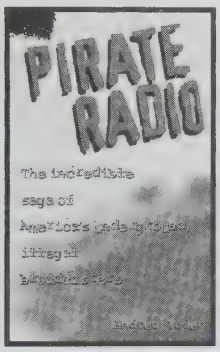

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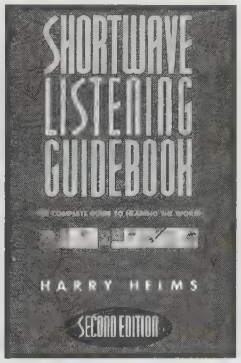

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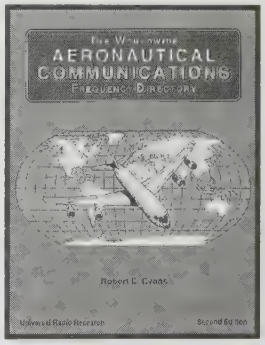

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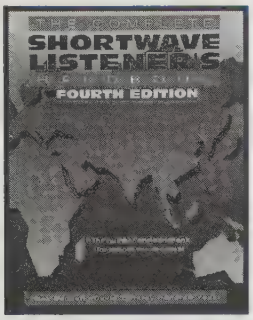

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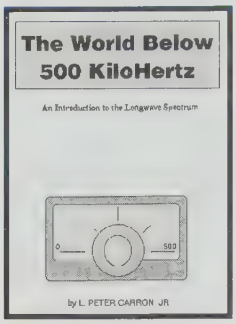

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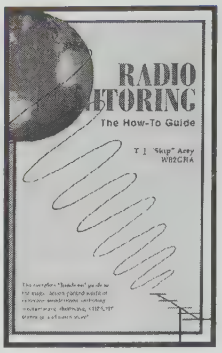

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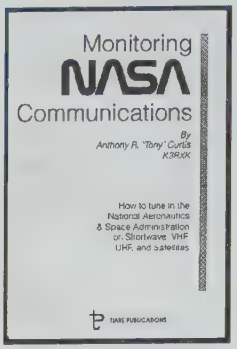

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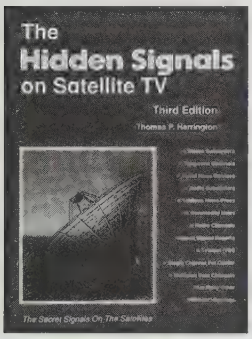

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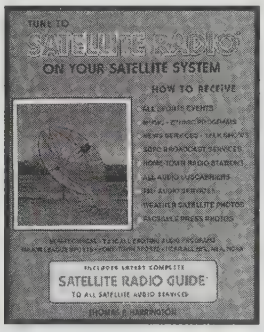

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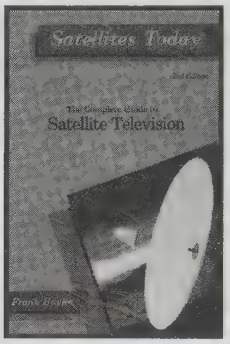

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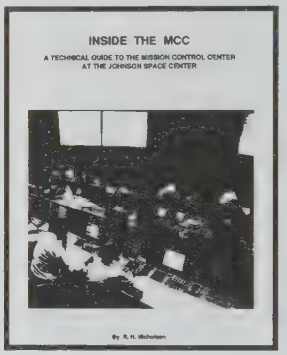

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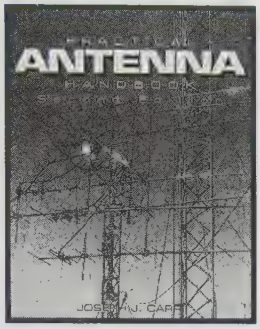

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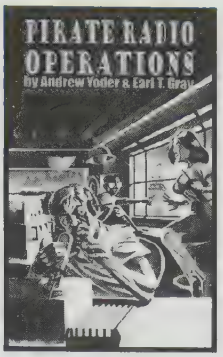

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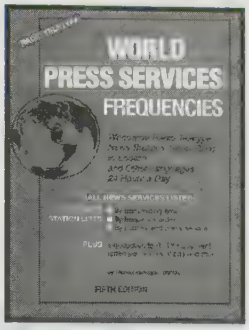

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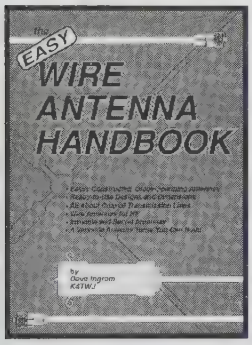

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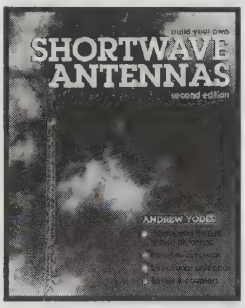

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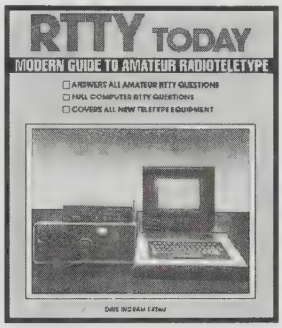
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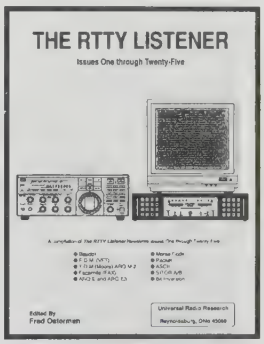

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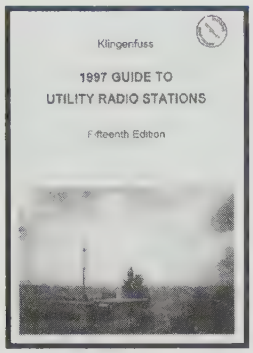

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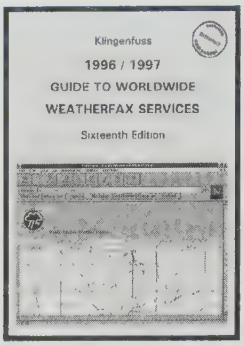

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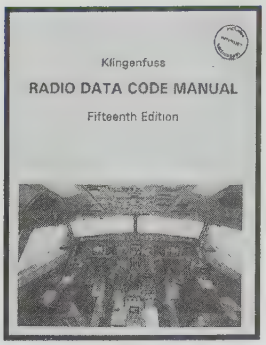

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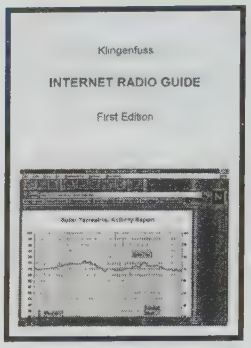

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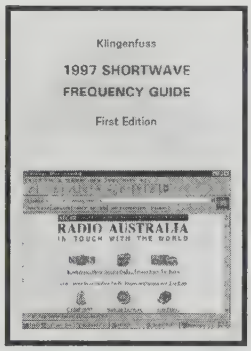

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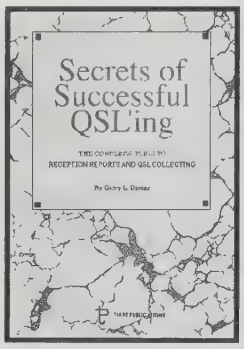

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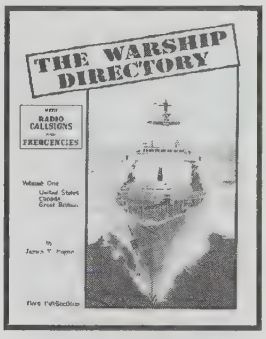

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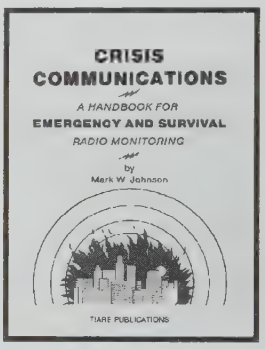

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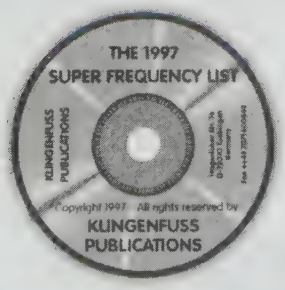

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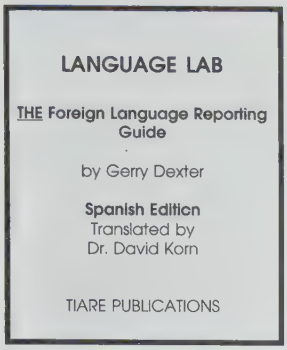

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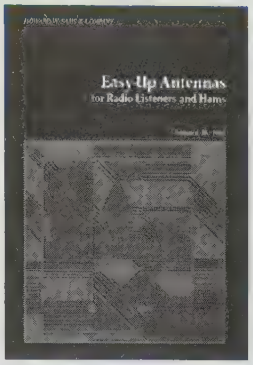

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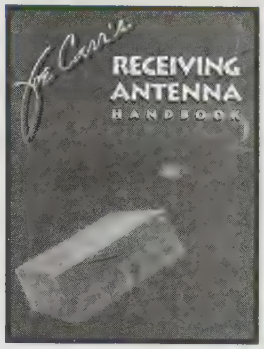

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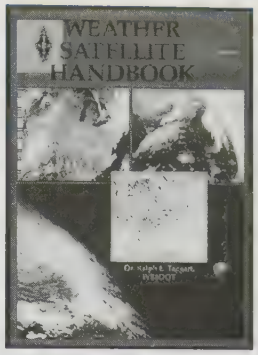

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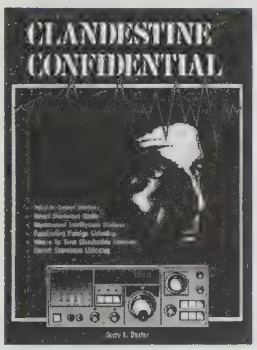

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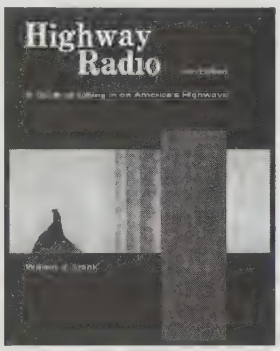

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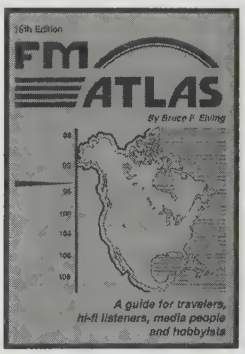

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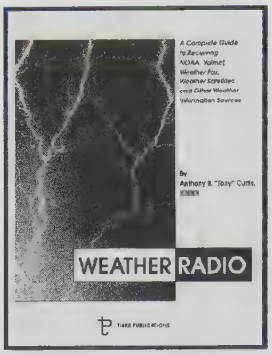

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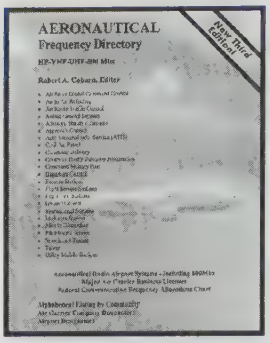

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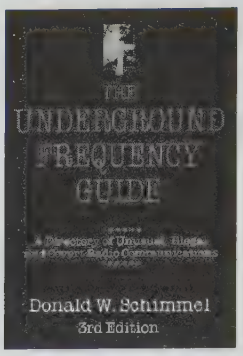

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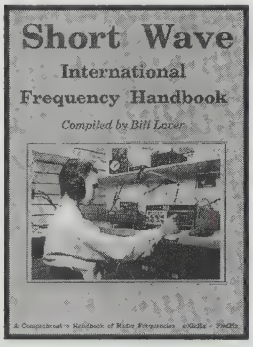

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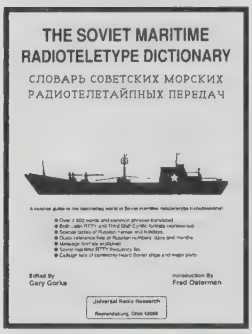

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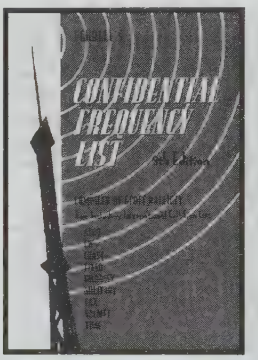

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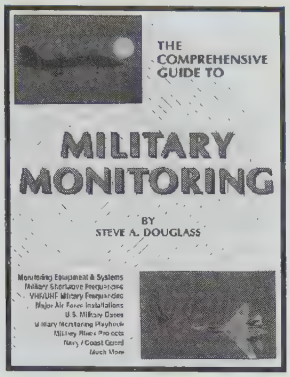

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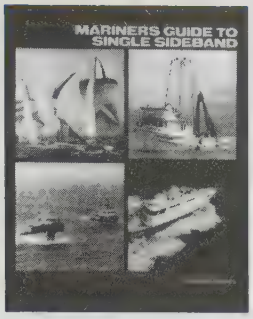

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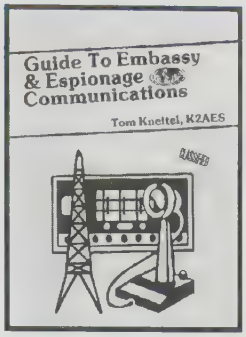

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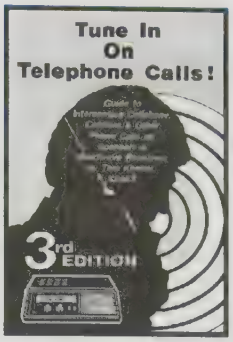

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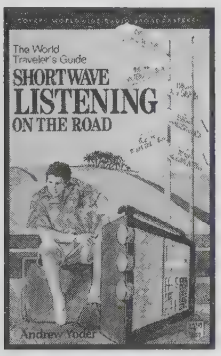

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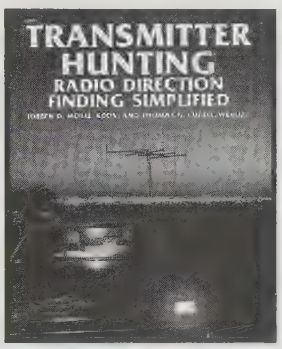

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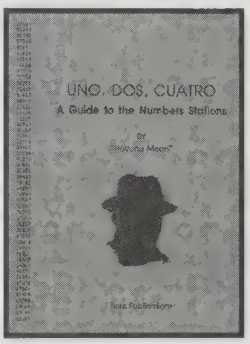

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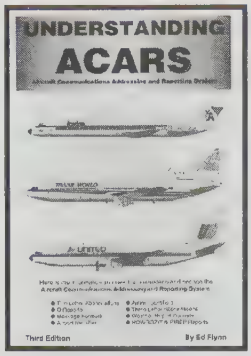

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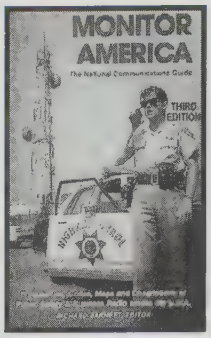

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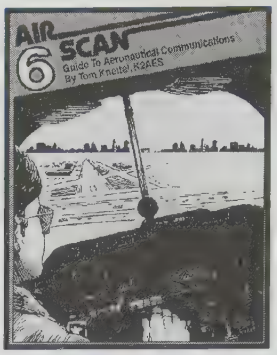

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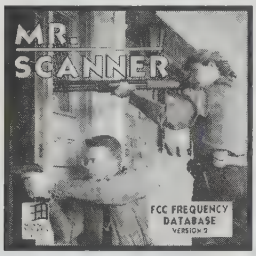

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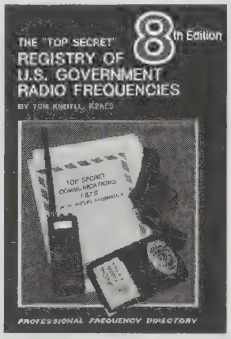

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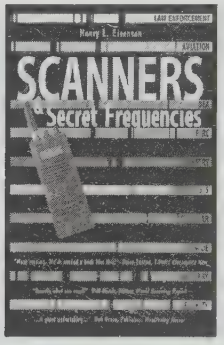

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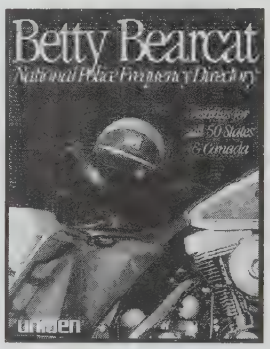

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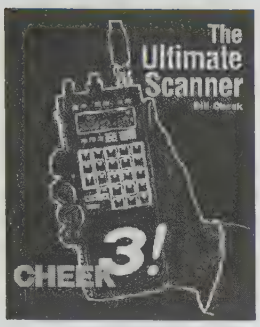

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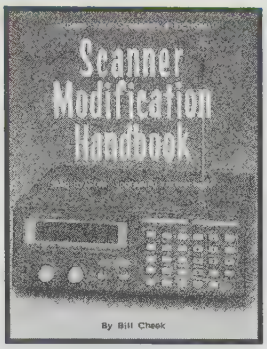

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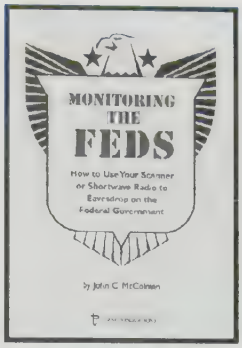
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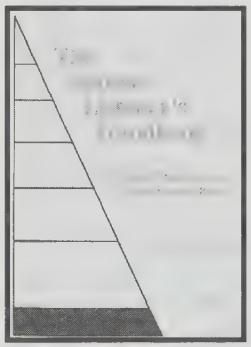

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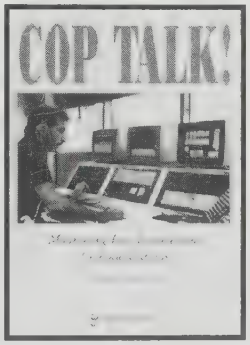

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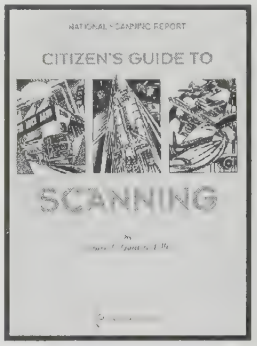

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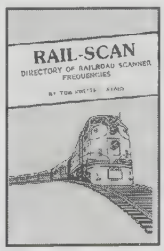

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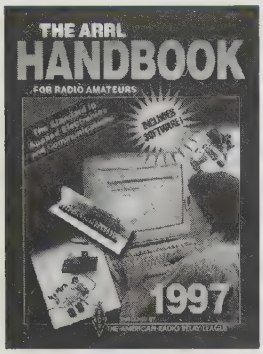

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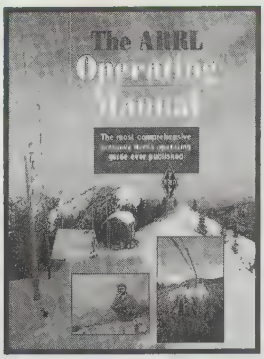

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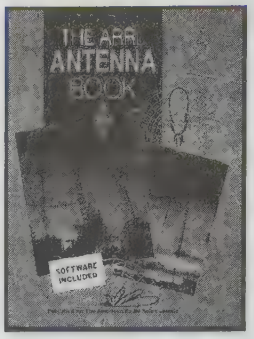

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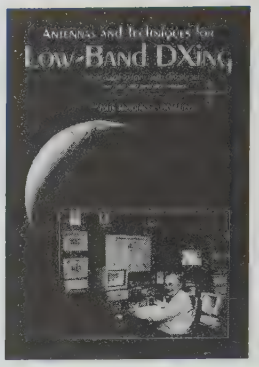

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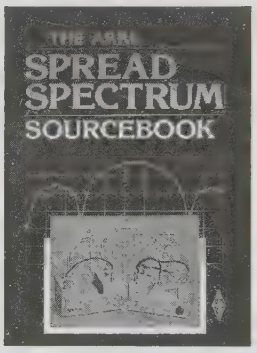

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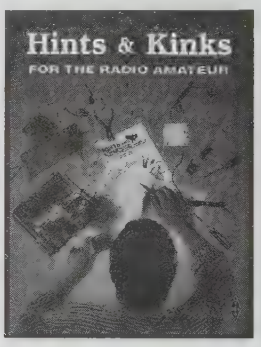

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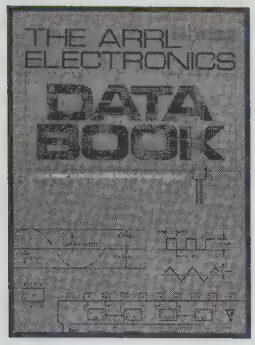

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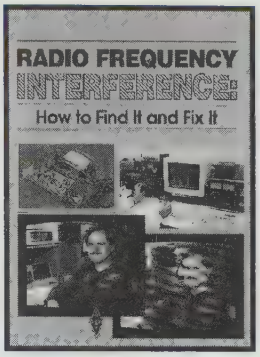

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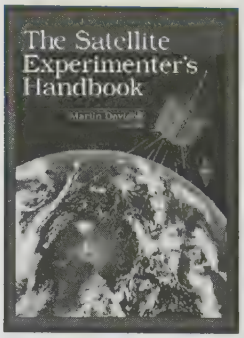

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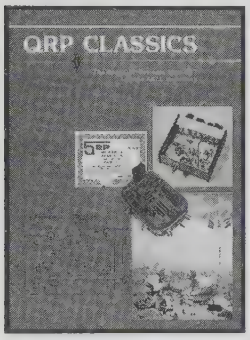

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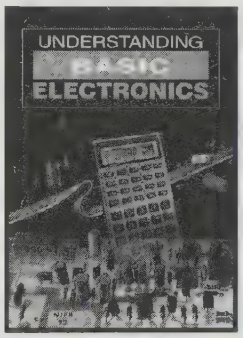

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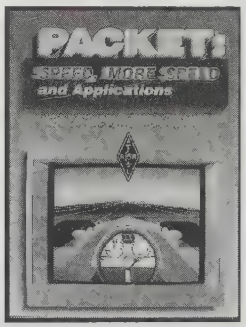

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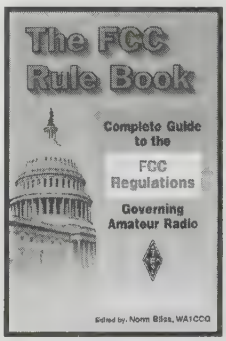

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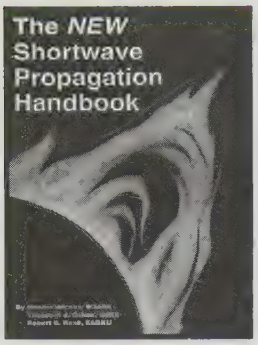

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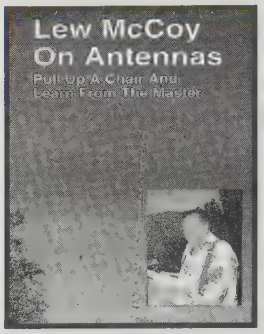

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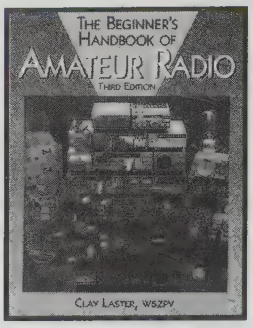

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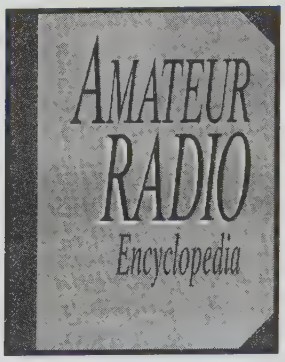

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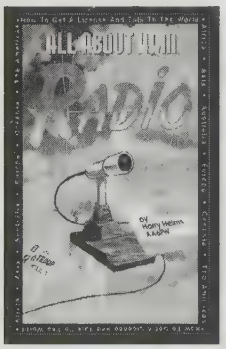

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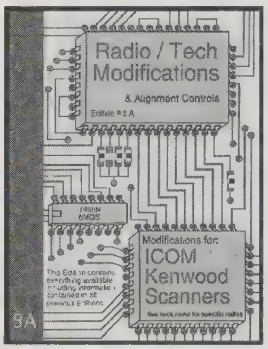

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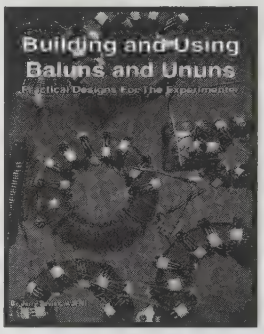

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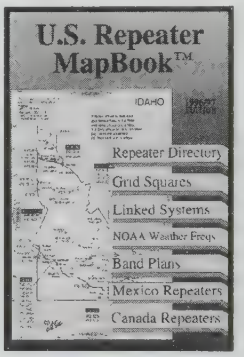

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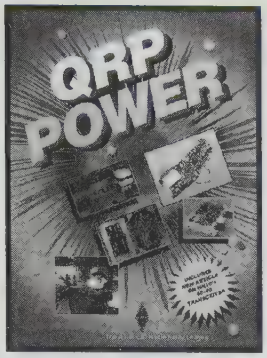

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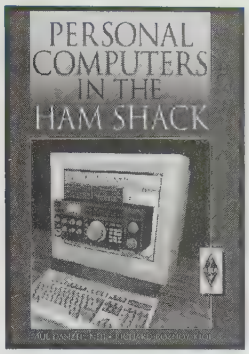

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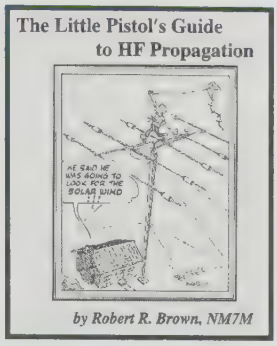

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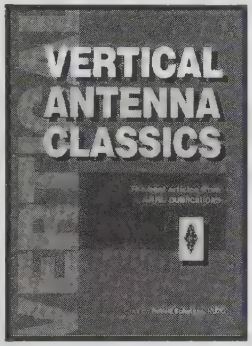

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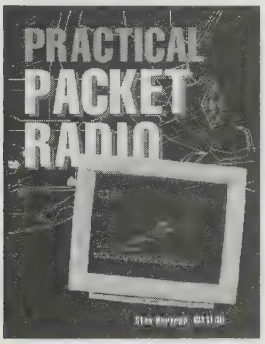

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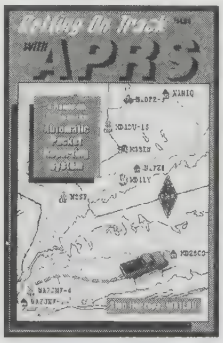

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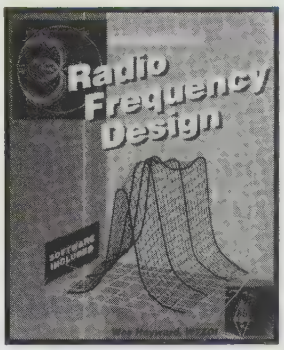

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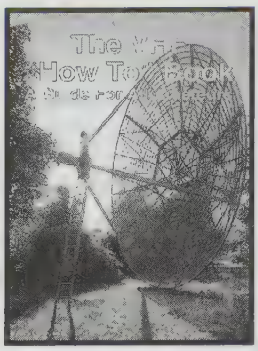

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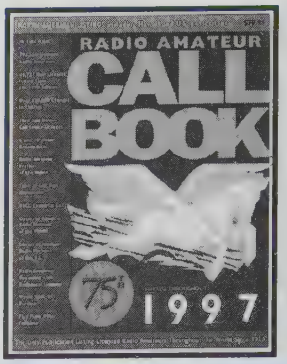

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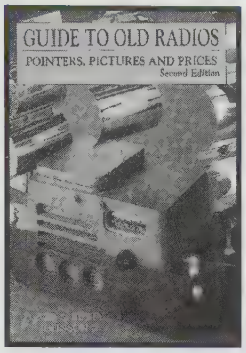

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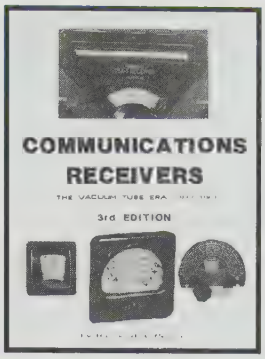

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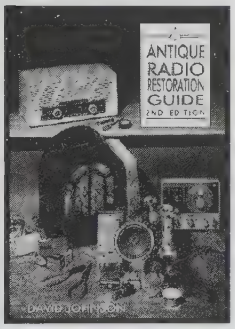

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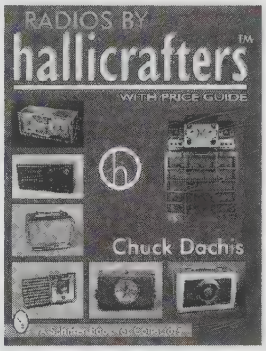

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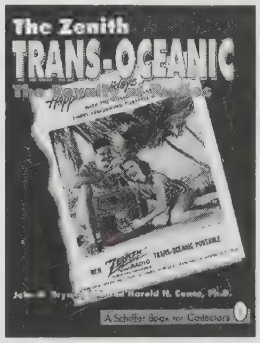

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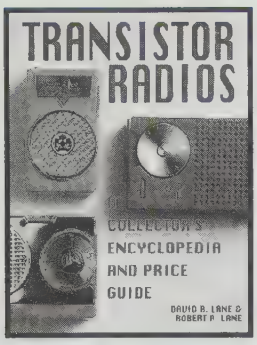

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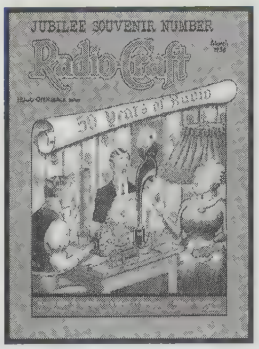

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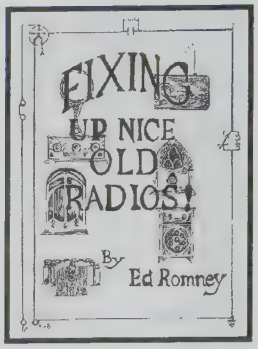

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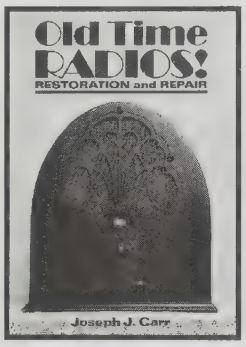

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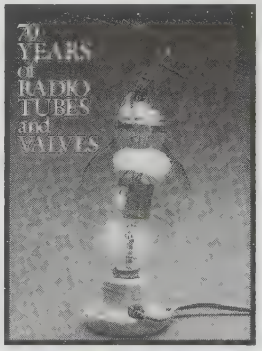

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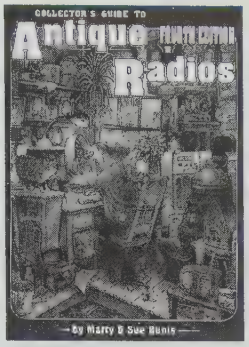

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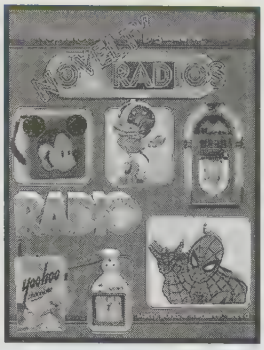

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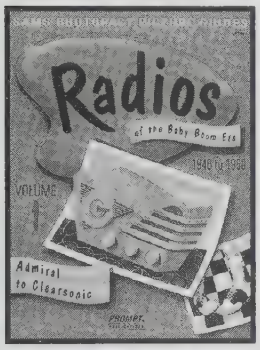

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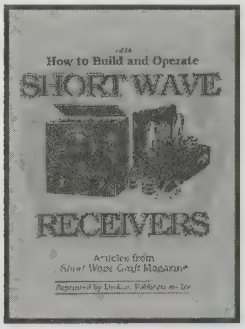

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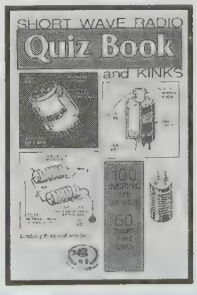

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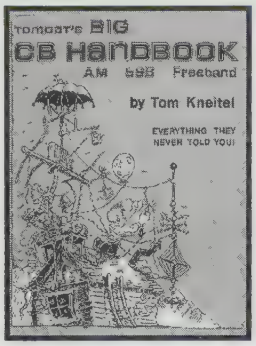

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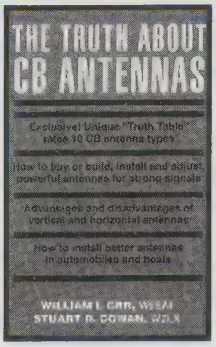
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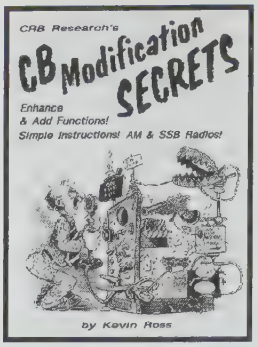

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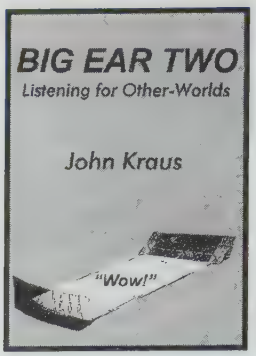

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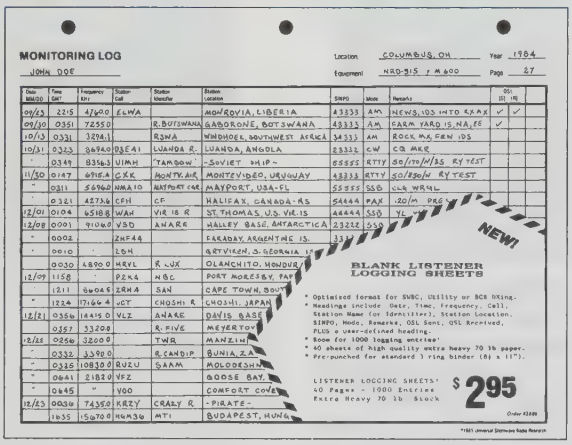
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✦ May be photocopy of original.

Each piece of equipment we sell comes with an owner's manual. Owner's manuals are listed above for those who require replacement or review copies. We attempt to stock all listed manuals, however some delays are possible.

Please Add $2 Per Manual for Shipping

Extended Warranties

The Universal extended warranty is valid from the date that the regular manufacturer's warranty expires and is subject to conditions and limitations of the original manufacturer's warranty. Warranties are not transferable. Extended warranties are only available at time of original equipment purchase. All extended warranty repair must be performed at Universal Radio. It will be the customer's responsibility to retain and submit a copy of their invoice as proof of warranty coverage. The purchaser is responsible for the cost of transportation of equipment to Universal for repair. Universal will bear the cost of return ground shipment to the purchaser (within the U.S.A.). Items not covered by warranty include: damage caused by misuse, abuse, tampering or neglect, improper or unauthorized maintenance and repair, damage caused by lightning or line voltage transients, routine check-outs, final output tubes and final transistors. The original purchaser may cancel this extended warranty within ten days of purchase and receive a full refund for the price of the extended warranty.

SHORTWAVE RECEIVERS

Item	Initial Mfg's Warranty Period	Additional Time Covered	Total Warranty Period	Order#	Cost
Drake R-8A	1 year	2 years	3 years	#2193	$39.00
Drake SW-8	1 year	2 years	3 years	#0564	29.00
Drake SW-1/2	1 year	2 years	3 years	#0867	29.00
Grundig YB-305	1 year	2 years	3 years	#1717	19.00
Grundig YB-400	1 year	2 years	3 years	#2044	19.00
Icom R-8500	1 year	2 years	3 years	#0000	49.00
Icom R-9000	1 year	2 years	3 years	#1585	99.00
JRC NRD-345	1 year	2 years	3 years	#1937	39.00
JRC NRD-535/D	1 year	2 years	3 years	#2657	39.00
Kenwood R-5000	1 year	2 years	3 years	#2001	29.00
Lowe HF-150/225/E	1 year	2 years	3 years	#3148	29.00
Sangean ATS-808	1 year	2 years	3 years	#2091	19.00
Sangean ATS-818/CS	1 year	2 years	3 years	#1431	19.00
Sony ICF-2010	1 year	2 years	3 years	#2764	19.00
Sony ICF-SW30/33/40	1 year	2 years	3 years	#1437	19.00
Sony ICF-SW55	1 year	2 years	3 years	#1476	19.00
Sony ICF-SW77	1 year	2 years	3 years	#1070	19.00
Sony ICF-SW7600G	1 year	2 years	3 years	#1649	19.00
Universal M-450	1 year	2 years	3 years	#0710	19.00
Universal M-900	½ year	2½ years	3 years	#2897	19.00
Universal M-8000	1 year	2 years	3 years	#2718	39.00
Universal M-1200	1 year	2 years	3 years	#3170	19.00
Yaesu FRG-100	1 year	2 years	3 years	#3190	29.00

AMATEUR TRANSCEIVERS

Item	Initial Mfg's Warranty Period	Additional Time Covered	Total Warranty Period	Order#	Cost
Icom IC-706	1 year	2 years	3 years	#1459	$49.00
Icom IC-756	1 year	2 years	3 years	#0373	59.00
Icom IC-775 DSP	1 year	2 years	3 years	#0089	79.00
Icom IC-781	1 year	2 years	3 years	#2865	89.00
Kenwood TS-450/690S	1 year	2 years	3 years	#2283	49.00
Kenwood TS-850/870S	1 year	2 years	3 years	#0709	59.00
Kenwood TS-950S	1 year	2 years	3 years	#0222	89.00
Yaesu FT-840/900	1 year	2 years	3 years	#0206	39.00
Yaesu FT-990/DC	1 year	2 years	3 years	#2464	59.00
Yaesu FT-1000/D	1 year	2 years	3 years	#0231	79.00
◆ Single Band Handhelds	1 year	2 years	3 years	#2973	29.00
◆ Dual Band Handhelds	1 year	2 years	3 years	#0410	39.00
◆ Single Band Mobiles	1 year	2 years	3 years	#0197	29.00
◆ Dual Band Mobiles	1 year	2 years	3 years	#0254	39.00
◆ H.F. Mobiles	1 year	2 years	3 years	#3487	39.00

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Quantity	Order #	Item Description	Price Each	Total Price	Shipping

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❒ Check or Money Order

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Order Total	

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Method of Shipment:

Our normal method of shipment is UPS surface for equipment and book rate for books. If books are ordered with equipment the entire shipment will be sent UPS. Foreign orders will be sent postal surface unless airmail is specified. If you wish your order to be shipped by some other method (UPS Second-Day, UPS Next-Day, Postal, Air Freight, etc.) include additional remittance and indicate method below:

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Office Use Only 97-03

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Reynoldsburg, OH 43068-4113 U.S.A.

☎ **Phone:** 800 431-3939 Prices & Orders
614 866-4267 Information Line

➡ **FAX:** 614 866-2339

💻 **E-mail:** dx@universal-radio.com

Returned items must be in original, as shipped, condition including the original box, manuals, accessories, copy of sales receipt and warranty card. Returns must be within 14 days of purchase and are subject to a 15% restocking fee. Outdoor antennas, software, custom cables and shipping are not refundable.

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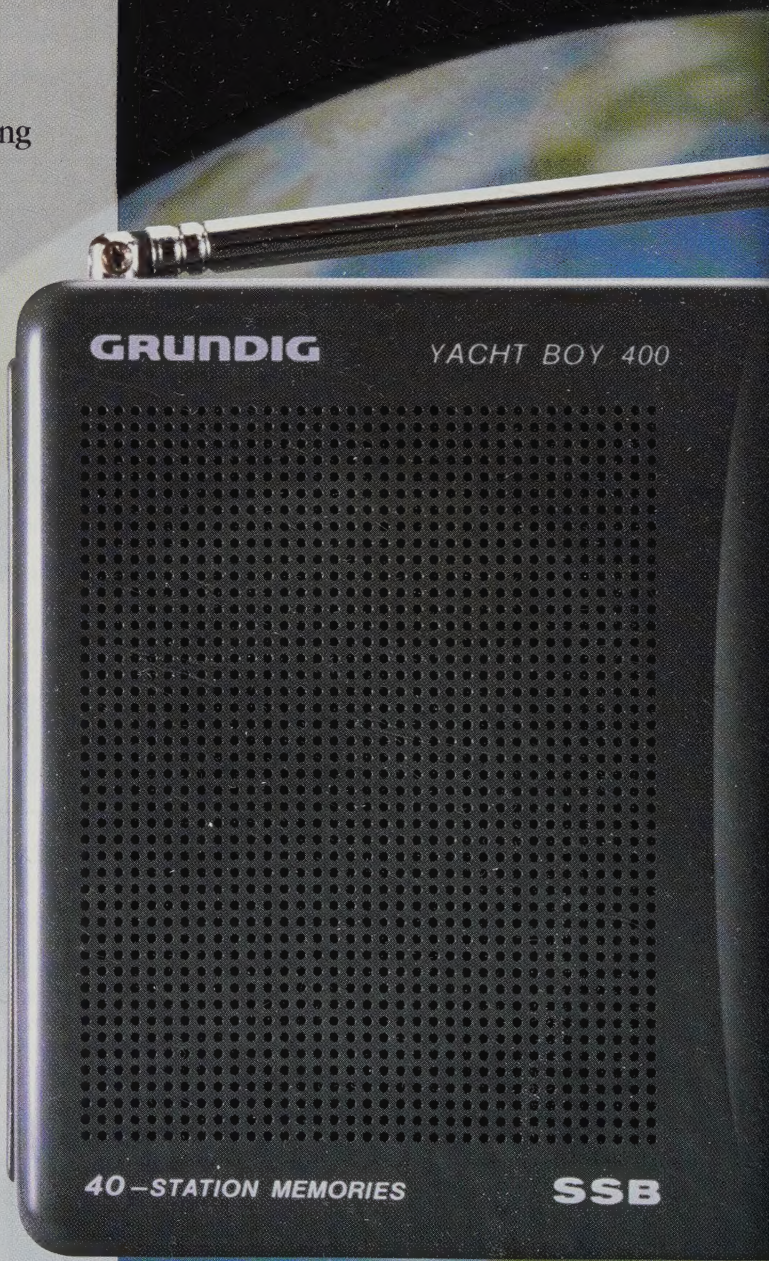
But the advantage mentioned most often in the YB-400 reviews was its ease of use for the novice listener. Following the included Grundig Shortwave Listening Guide, in moments you can be listening to foreign broadcasts beamed to North America.

Soon, you will be scanning the airwaves to tune in exotic music programs and sports events from faraway locales. The YB-400 even picks up shortwave amateur (ham radio) broadcasts and shortwave aviation/military frequencies (cockpit-to-tower communications). The possibilities for family fun, education, and enjoyment are boundless.

For travel or home use, Grundig adds a dual-time travel clock with snooze and sleep timer. FM band is stereophonic with your



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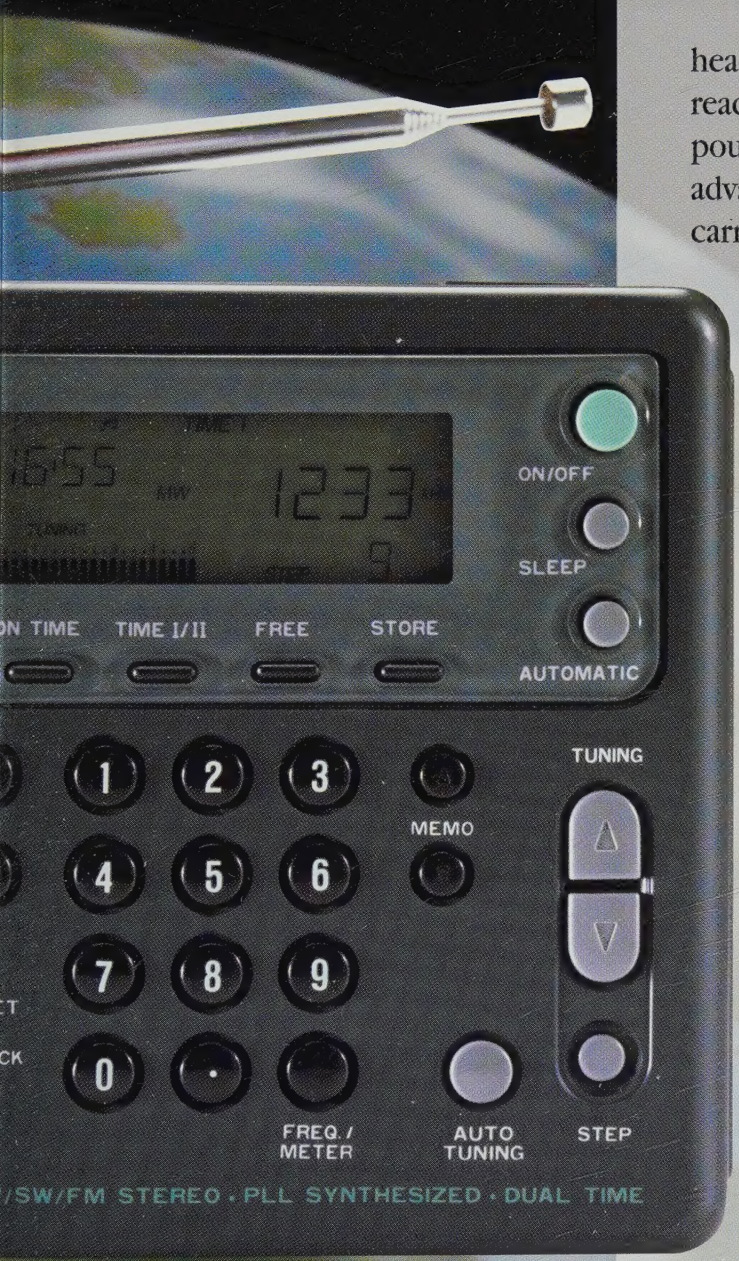

headphones. The lighted LCD panel is easy to read in the dark. Comes with a form-fitting pouch, integral telescoping antenna and advanced external antenna on a compact reel, carry-strap, batteries, earphones and complete instructions.

Made by Germany's Grundig.
World leader in shortwave radios, the 400 measures just 7-3/4"L x 4-1/4"H x 1-1/4"W; weighs only 20 oz. It slips easily into your carry-on for travel and fits on a nightstand, office credenza, or yacht cabin console. One-year warranty.

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